

ARTICLE V. DEVELOPMENT STANDARDS

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Division 1 General Provisions**35-501 General Provisions****(a) Applicability**

The provisions of this Chapter shall apply to any Application for Development Approval, except as otherwise provided.

(b) Administrative Exceptions

- (1) To facilitate flexibility in design while maintaining the safety, health and welfare of the public, the Director of Development Services in consultation with the Director of Public Works may grant administrative exceptions to the following technical design requirements found in the following sections of Article V:
 - Section 35-502 Traffic Impact Analysis
 - Section 35-504 Stormwater Management
 - Section 35-505 Floodplain Development Standards
 - Section 35-506 Transportation and Street Design
 - Section 35-507 Utilities
 - Section 35-526 Parking & Loading Standards (parking stall dimensions and parking requirements not to exceed +/- 10 % of the required parking).
 - Section 35-527 Off-Street Truck Loading Requirements
- (2) No administrative exception shall be granted unless:
 - A. The Director of Planning certifies that the proposed exception does not conflict with the goals and policies of the Master Plan; and
 - B. The Applicant demonstrates, through documentation and/or studies, based on generally accepted engineering principles, that adherence to the standard provided by this Chapter would pose a threat to health and safety.
- (3) Where an administrative exception is not granted, or where an administrative exception is not permitted (as in the case of street connectivity, maximum parking requirements, and other items not enumerated in subsection (2), above), the applicant may seek a variance from the Planning Commission pursuant to §§ 35-483 or 35-484 in the case of subdivision plats, or an appeal or variance pursuant to §§ 35-481 or 35-482 in the case of zoning permits.

(Ord. No. 98697 § 1)

(c) Site improvements.

Streets, alleys, sidewalks and other site improvements required under the provisions of this chapter to be installed in subdivisions by the subdivider shall conform to the specification of this chapter and to the then current policies and regulations of the City of San Antonio, City Public Service, San Antonio Water System, or other approved utility districts or agencies involved with reference to payment for such installations, refunds, credits and other financial arrangements.

(Ord. No. 98697 § 1)

(d) Standard Specifications for Construction.

All construction shall meet the requirements as set forth in the City's "Standard Specifications for Public Works Construction," dated October 1995, as amended (hereinafter the "Standard Specifications"), to the extent not inconsistent with this Chapter. The "Standard Specifications for Public Works Construction" are hereby incorporated by reference as if set forth in their entirety herein. Copies of the document are on file in the Office of the City Clerk. To the extent that there is any inconsistency between the Standard Specifications and the provisions of this Chapter, the provisions of this Chapter shall govern.

Sampling and testing of materials and laboratory inspection of materials and processes shall be performed at the expense of the developer. Testing shall be in accordance with the City of San Antonio's Standard Specifications for Public Works Construction. Firms providing construction materials testing services must have an established in-house laboratory meeting the standards of the ASTM requirements.

(e) Americans with Disabilities Act**(1) Infrastructure**

Infrastructure construction and improvements of facilities shall comply with the Americans with Disabilities Act of 1990 (42 U.S.C Subsection 12181 et seq., Pub. L 101-336 and implementing regulations at 28 C.F.R. parts 35 and 36). Applicants should consult the ADA Technical Assistance Manual from the U.S. Dept. of Justice on the Internet at <http://www.usdoj.gov/crt/ada/taman3.html>, and Technical Assistance Manual for State and Local Governments at <http://www.usdoj.gov/crt/ada/taman2.html>.

(2) Multifamily Housing

Multifamily housing development shall comply with section 804 (f)(5)(C) Fair Housing Amendments Act of 1988 and the implementing regulations codified at 24 CFR 100.205. Applicants should consult the Fair Housing Accessibility Guidelines from the U.S. Dept. of Housing and Urban Development on the internet at <http://www.hud.gov/fhefhag.html>. See also HUD Fair Housing Assistance Providers Web site: <http://www.hud.gov/fairhsg1.html>.

(f) Extended Warranty Bond

All subdivisions requiring streets and drainage improvements within the City of San Antonio and the Extraterritorial Jurisdiction shall be subject to a one (1) year maintenance bond.

Prior to acceptance of subdivision improvements, the developer shall provide the City with an extended warranty bond, issued by a corporate surety company licensed to transact business in the State of Texas, to secure maintenance and repair of subdivision for the period ending at least twelve (12) months subsequent to acceptance of the subdivision improvements by the City.

(g) Incorporation by Reference

The San Antonio Water System Utility Service Regulations, as amended, are incorporated by reference into Chapter 35 (Unified Development Code) of the Code of the City of San Antonio, Texas. The most current edition of the San Antonio Water System Utility Service Regulations is on file in the Office of the City Clerk and the Office of the President/Chief Executive Officer of the San Antonio Water System.

(Ord. No. 97568 § 2)

Division 2 Infrastructure Standards**35-502 Traffic Impact Analysis****(a) Specific Requirements for Transportation LOS****(1) Traffic Impact Analysis (TIA)**

No Permit shall be approved unless a traffic impact analysis (TIA) or PHT Generation Form is completed and approved as provided in this Section. A traffic impact analysis (TIA) or a PHT Generation Form shall be performed by the property owner (or its agent) according to the format established in Appendix B, § 35-B122. The type of submittal shall be based upon the number of peak hour trips (PHT) generated by the proposed development, as set forth in Table 502-1.

Table 502-1

Peak Trips	Hour	Submittal Category (see Appendix B)
1,001 or more		Level 3 TIA
501 – 1,000		Level 2 TIA
101 – 500		Level 1 TIA
100 or less		PHT Generation Form (no TIA is required)

35-502 continued

When an activity on, or change to, property occurs that varies from the activity on which a previous TIA was submitted and accepted, and the new activity places the project into a Level different from that of the previous TIA or generates an increase of at least 100 PHT (or 10 percent for a Level 3 TIA) relative to the previous TIA, the property owner (or its agent) shall perform and submit to the City an amended TIA under the formats specified in Appendix B, § 35-B122. For the purposes of this section, the amendment will be satisfactory to determine if the increase in PHT impacts capacity and requires additional mitigation as defined herein.

(2) Permits or Development Orders

The appropriate level TIA as required by subsection (a) of this Section may only be required by the City as part of the approval process for the activities described in **Table 502-2** for each respective category of property, as follows:

Table 502-2

Category	Description	Point at Which TIA is Required
Pre-Development	Property which is not the subject of a valid Master Development Plan	May be required as a condition of acceptance of a Master Development Plan.
Pre-Platting	Property which is the subject of a Master Development Plan	May be required at the time of platting, as a part of the plat approval process.
Platted	Property which is the subject of a valid plat which has been accepted and approved by the City.	May be required at the time a building permit is requested.
Post-TIA	Property which is the subject of a TIA provided at one of the points identified above (or for which the Director of Public Works has determined no TIA is needed) or voluntarily provided by the Developer.	No further TIA required.

(3) Rezoning

- A. A TIA may be required any time a property owner seeks to rezone property that is the subject of a Master Development Plan in a manner that: (i) would change the character of use (i.e., commercial, multi-family, residential etc.) of the property from the use(s) proposed in the Master Development Plan; and (ii) results in the PHT under the proposed zoning and use exceeding by more than 100 PHT the maximum PHT that could have been generated by uses permitted in the existing land use classification, or results in a TIA level different from that derived from the existing Master Development Plan.

- B. A TIA may be required any time a property owner seeks to rezone property that is not the subject of a Master Development Plan in a manner that would result in the PHT under the proposed zoning and use exceeding by more than 100 PHT the maximum PHT that could have been generated by uses permitted in the existing zoning, or results in a TIA level different from that derived from the existing zoning.
- C. The requirement to perform a TIA under this subsection shall not apply if the existing zoning is a temporary zoning resulting from annexation.

(4) Impact Area

The Impact Area is the area within which any analysis is conducted in order to determine compliance with the Level of Service Standards. This area shall be based on the size of the development and the PHTs projected to be generated by the proposed development. The impact areas shall be established as follows:

Table 502-3

Category	Impact Area
Level 1 or 2 TIA	the site, and the area within a one-quarter ($\frac{1}{4}$) mile radius from the boundary of the site
Level 2 TIA	The City Traffic Engineer may require the area of the study to be extended up to a maximum area of one (1) mile radius.
Level 3 TIA	the site, and the area within a one mile radius from the boundary of the site

(5) Mitigation

The Applicant may propose mitigation measures as described in subsections (8) through (10) herein as an alternative to deferral or Permits or denial of the Application. Mitigation measures may be permitted which would allow the LOS to be achieved by permitting the transportation network to function more efficiently, or which advance the construction of necessary transportation facilities so that they are available concurrent with the impacts of the development.

- A. Roadways and intersections, within the study area, that are expected to operate at level of service D, E, or F, under traffic conditions including projected traffic plus site-generated traffic must be identified and viable recommendations made for raising the traffic conditions to level of service C or better.
- B. As depicted in Table 502-4, roadways and intersections within the project site and along its boundary streets which are projected to operate at level of service D, E, or F, without site-generated traffic, need not to be brought up to level of service C by the proposed development. Such roadways and intersections, under conditions which include such site generated traffic, must

be brought up to the projected Level of Service that would exist without the site-generated traffic, by altering on-site and/or off-site traffic demands and/or capacities. Level of Service notwithstanding, required traffic impact mitigation improvements are limited to those that can be implemented within the project site and along its boundary Streets.

Table 502-4 Minimum Acceptable Level of Service

Level of Service Without Development

Projected Level Of Service		A	B	C	D	E	F
	A	NA	-	-	-	-	-
	B	B	NA	-	-	-	-
	C	C	C	NA	-	-	-
	D	C	C	C	NA	-	-
	E	C	C	C	D	NA	-
	F	C	C	C	D	E	NA

(6) Implementation

For phased construction projects, implementation of these traffic improvements must be accomplished no later than the completion of the project phase for which the capacity analyses show that they are required. Plats for project phases subsequent to a phase for which a traffic improvement is required may be approved only if the traffic improvements are completed or bonded.

(7) Limitations on Traffic Impact Mitigation

A. Additional limitations on traffic impact mitigation requirements are as follows:

1. Off-site traffic impact mitigation improvements are not required on public streets for which a funded capital improvement project is scheduled to be accomplished within three (3) years of the TIA review.
2. Requirements for mitigation for land development projects located inside the circumferential freeway, Interstate Highway 410, will be considered on a case by case basis and may be waived by the City Council for City-sponsored infill development project.

B. Voluntary efforts, beyond those herein required, to mitigate traffic impacts are encouraged as a means of providing enhanced traffic handling capabilities to users of the land development site as well as others.

C. Traffic mitigation tools include, but are not limited to, pavement widening, turn lanes, median islands, access controls, curbs, sidewalks, traffic signalization, traffic signing, pavement markings, etc.

35-502 continued**(8) Exemptions**

The City finds and determines that certain factors, such as interconnected Street systems, mixed uses, and the availability of pedestrian facilities, can result in fewer trips than isolated, low-density subdivisions. Certain development patterns produce fewer trips and shorter trips than developments subject to conventional zoning or located on the fringe of the metropolitan area. The City hereby finds that traffic patterns and infrastructure within its urban core are established, and that there is a strong public policy to encourage reinvestment in the City's downtown areas. Further, The City hereby finds that there is a strong public policy to encourage infill development and that there is little opportunity to expand transportation capacity in many infill areas without destroying the City's historic built environment. Accordingly, the following are exempt from the provisions of this Section.

- A. Applications for Development Approval within the "D" Downtown District.
- B. Any development within an Infill Development Zone (IDZ).
- C. Any Traditional Neighborhood Development (TND) or any Transit-Oriented Development (TOD).

35-503 Parks/Open Space Standards

Parks and open space provide a valuable asset to the urban form of the City, its historical development, and the general welfare of its residents. Parks and open space have provided a significant role in the history of the City of San Antonio. The Laws of the Indies provided that the size of the parks and open spaces, such as plazas, shall be proportioned to the number of inhabitants and should take into consideration the growth of the community. Consistent with the historical development of the City, it is the intent of this Section that parks and open space should provide focal points for new communities. A central square or green, for example, may comprise a majority of the area required for dedication.

This Section implements the following provisions of the Master Plan:

- *Neighborhoods, Policy 3a: Protect the character and quality of neighborhoods by maintaining and enhancing their open spaces and parks.*
- *Neighborhoods, Policy 3a: Amend applicable ordinances to require developers of subdivision plats with private common areas, to establish mandatory homeowners associations which shall be responsible for the maintenance of the common areas, or otherwise provide for same.*
- *Neighborhoods, Policy 3a: Amend applicable ordinances to require developers of subdivision plats with private common areas to file a proposed operations budget and plan for long term capital repair and replacement.*
- *Natural Resources, Policy 1d: Encourage retention of the 100-year floodplains as natural drainage ways without permanent construction, unnecessary straightening, bank clearing or channeling.*
- *Natural Resources, Policy 1d: Encourage the ecological management of floodplains and promote their use as open space, such as greenways, parks, wildlife habitat, and pedestrian-friendly linkage corridors.*
- *Urban Design, Policy 1g: Prepare design and construction policies and standards for utility and transportation infrastructure, capital improvement projects, public facilities and development projects that reinforce neighborhood centers and provide diverse, pedestrian-friendly neighborhoods.*
- *Urban Design, Policy 3a: Ensure that parks are fully accessible to all citizens.*
- *Urban Design, Policy 3a: Encourage conservation and protection of identified properties through leases, conservation or scenic easements, overlay zoning districts, protective covenants, tax abatements, or acquisition (by purchase or donation).*
- *Urban Design, Policy 3a: Develop a requirement that subdividers of land provide recreational opportunities for City residents through the dedication of park land, or fees in-lieu of dedication.*

(a) Applicability

- (1) The provisions of this section shall apply to any application for residential subdivision plat approval, unless exempt pursuant to subsection (3), below.
- (2) The location and extent of Parks/Open Space or designation of a fee-in-lieu of option shall be indicated on any Master Development Plan, with dedication deferred until a subdivision plat is filed consistent with subsection (g) of this section. Where indicated, the required area shall conform to the requirements of subsection (b) as they relate to

the total number of dwelling units approved at the time the Master Development Plan is filed.

Commentary: The Master Plan requires new subdivisions to include parks or to pay fees in lieu of providing parks. Developers may opt to show parks on a Master Development Plan in order to facilitate the phasing of subdivision plats filed pursuant to the Master Plan. This allows some plats to be approved without individually complying with this Section, so long as the requirements of this Section are met for the entire development subject to the Master Development Plan. The applicant and the City may also execute a deferment contract which provides for the provision of parks/open space during a future phase of the development.

(3) The provisions of this Section do not apply to:

- A. A proposed subdivision which includes less than twenty-five (25) dwellings; or
- ~~B.~~ A proposed subdivision located within an Infill Development Zone; or
- C. A proposed subdivision located within a planning area which has a surplus of improved neighborhood parks/open space, as designated in the Parks Master Plan unless the surplus has been eliminated by the subsequent approval of residential dwelling units within the planning area, as measured by the level of service standard established in Table 503-1, Column (B).

(Ord. No. 97568 § 2)

(b) Required Parks/Open Space

- (1) Required parks/open space shall be reserved for any development in the zoning districts or areas set forth in column "A" of Table 503-1, below, based upon the number of Dwelling Units in the proposed development corresponding the zoning district as set forth in Column "B" in **Table 503-1** below.

Table 503-1, Required Parks


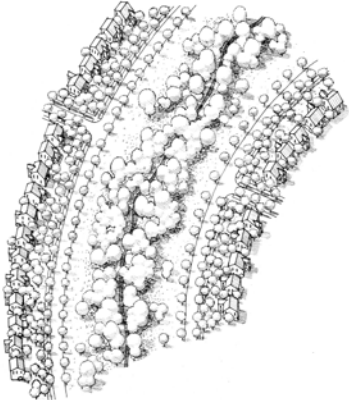
(A) Zoning District(s) Or Areas	(B) Required Parks or Open Space (acres per Dwelling)*
ETJ	1 per 114
CS, RE	N/A
R-20, R-15, R-10, R-8, R-6, RM-6, R-5, RM-5, R-4, RM-4, MH, MF-25, MF-33, MF-40, MF-50, TND, PUD, DR	1 per 114
O-1, O-2, NC, C-1, C-2, C-3, D	N/A
L, I-1, I-2	N/A



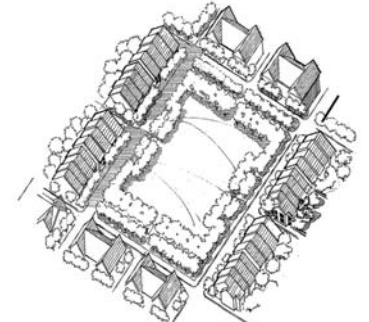
* The required acreage shall be rounded to the nearest one-tenth (e.g., 150 dwelling units x $[1/114] = 150 \times 0.009 = 1.3$ acres)

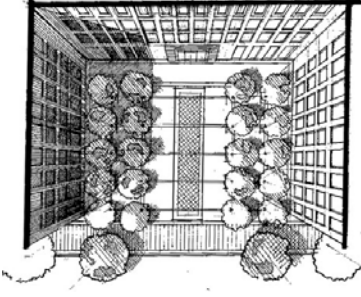
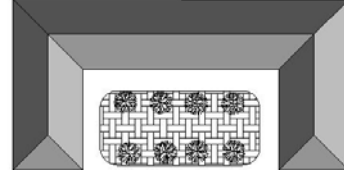
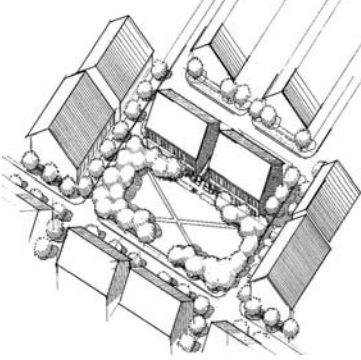
35-503(b) continued

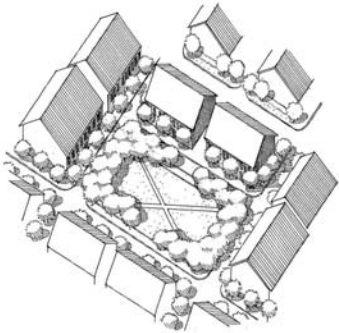
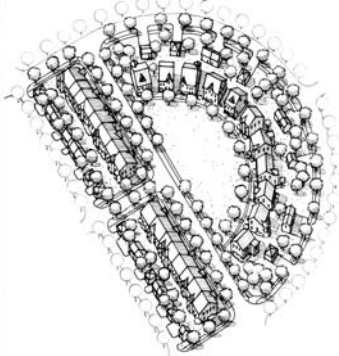
- (2) The applicant may dedicate any trail specifically delineated in the Parks and Recreation System Plan (adopted January 1999) to the public. Any trail dedicated pursuant to this subsection will count towards meeting the required active parks and open space requirements of Table 503-1. The trails shall be maintained in accordance with subsection (f)(Preservation of Parks and/or Open Space) of this Section.
- (3) The types of park or open space that may be provided to satisfy the requirements of this Chapter are described in Table 503-2. The description of each category of park or open space is set forth in Column (B) of Table 503-2. Minimum dimension, improvement, and maintenance requirements shall be consistent with Column (C) of Table 503-2. (Note: set-aside provisions are set forth in Table 503-1). The applicant may choose among the types of parks or open space to include within the proposed development consistent with the overall minimum set-aside requirements of Table 503-1 and the requirements of subsection (d) of this Section.
- (4) The required park or open space areas shall be provided as common area for the use of all residents/occupants of the Proposed Development.
- (5) The following areas shall not be considered parks or open space pursuant to this subsection:
 - A. Areas covered by buildings, parking lots, or other impervious surfaces accessible to automobiles provided, however, that not more than fifty percent (50%) of a parking area accessory to, and reserved exclusively for, a park or open space area shall be counted toward the minimum land area required by this subsection.
 - B. Utility easements, drainage easements, or street rights-of-way, unless such areas are useable for public recreational purposes and will not be permanently converted to a street or trench. Land underneath overhead utility lines shall in no instance be considered a park/open space except where used for jogging trails, bicycle trails, or parking areas accessory to a park/open space.
 - C. Streets.
 - D. Ponds or lakes exceeding 2,500 square feet, unless surrounded by an upland area with a minimum width of twenty-five (25) feet.



TABLE 503-2

(A) Park or Open Space Cate- gory	(B) Description	(C) Maintenance Requirements	(D) Illustration
Natural Areas and Agricultural Areas	Natural Areas are areas established for the protection of natural attributes of local, regional, and statewide significance, which may be used in a sustainable manner for scientific research, education, aesthetic enjoyment, and appropriate use not detrimental to the primary purpose. These areas are resource rather than user-based, but may provide some passive recreational activities such as hiking, nature study, and picnicking. Natural Areas may include floodplains mapped by FEMA with a drainage area exceeding 300 acres, or creeks with a drainage area of less than 300 acres.	Maintenance is limited to a minimum removal and avoidance of hazards, nuisances, or unhealthy conditions. Natural watercourses shall be maintained as free-flowing and devoid of debris. Stream channels shall be maintained so as not to alter floodplain levels.	
Greenways	Greenways are areas connecting residences and recreational areas. Greenways are designed to incorporate natural settings such as creeks and significant stands of trees within neighborhoods. Parkways and greenways differ from parks, plazas and squares in that their detailing is natural (i.e. informally planted) except along rights-of-way, and may contain irregular topography.	A Greenway may be counted as Open Space provided, however, that: (1) the greenway shall have an average width of not less than fifty (50) feet; and (2) if the greenway consists of agricultural areas, the agricultural areas shall have a continuous area of not less than fifty (50) acres. The agricultural areas may be combined with adjacent agricultural lands provided, however, that the minimum width prescribed above shall be met on all portions of the agricultural greenbelt on the site.	

(A) Park or Open Space Cate- gory	(B) Description	(C) Maintenance Requirements	(D) Illustration
Greenbelts	Greenbelts run along the perimeter of a neighborhood, and serve to buffer a neighborhood from surrounding non-compatible uses such as a highway corridor or industrial district, or from agricultural areas or adjacent neighborhoods. Greenbelts differ from the other types of open spaces in that they are left natural, and are not for recreational use.	<p>There is no tree planting requirement along rights-of-way for greenbelts.</p> <p>The following uses are permitted within the greenbelt: (1) Critical Areas, (2) Conservancy Lots with a minimum lot size of five (5) acres and a maximum impervious surface ratio of five percent (5%), or (3) linear parks improved with trails, benches, and/or playground equipment. Trails, benches and playground equipment shall not be considered impervious surfaces for purposes of computing impervious surface.</p> <p>The Greenbelt shall be an average of not less than one-hundred (100) feet in width and not less than fifty (50) feet at any point.</p>	
Playgrounds	Playgrounds provide play areas for children as well as open shelter with benches for parents. Playgrounds may be built within squares and parks or may stand alone within a residential block.	<p>Minimum Size: 5,000 square feet Maximum Size: 20,000 square feet</p> <p>Playing surfaces may be covered in sand, wood chips, or other equivalent material. Paths and walkways may be paved in concrete, crushed gravel, brick paver, or similar material, or partially paved.</p>	
Plazas	Plazas are areas for passive recreational use which are entirely bounded by Streets and/or lanes. Plazas are intended for master planned communities such as Planned Unit Developments (PUD's), or Traditional Neighborhood Developments (TND's), or for non-residential Use Patterns defined in Article 2 (Commercial Centers, Office or Institutional Campuses, and Commercial Retrofits).	<p>The plaza shall be square or rectangular with a length of not less than one and a half its width. The plaza shall be bounded on all sides by Streets, with Streets originating in the middle of each side, and two Streets originating from each corner.</p> <p>Minimum width: 200 feet Minimum length: 300 feet Maximum width: 530 feet Maximum length: 800 feet</p>	

(A) Park or Open Space Cate- gory	(B) Description	(C) Maintenance Requirements	(D) Illustration
Courtyard	A Courtyard is an open area adjacent to, or part of, a civic building or facility. Courtyards function as gathering places and may incorporate a variety of non-permanent activities such as vendors and display stands. Courtyards shall be credited toward Parks and Open Space requirements only for non-residential Use Patterns defined in Article 2 (Commercial Centers, Office or Institutional Campuses, and Commercial Retrofits), and shall be maintained in private ownership.	<p>Parking is permitted only at the edge of the Courtyard. Courtyards shall be paved in brick or other type of paver, or crushed stone. Courtyards shall be level, stepped, or gently sloping (less than 5% grade). At no time shall a Courtyard's horizontal length or width be greater than 3 times the height of the surrounding building(s).</p> <p>Minimum size: 2,000 sq ft Maximum size: 30,000 sq ft</p> <p>Courtyards may be left unplanted. If planted, the trees shall frame the Courtyard space or the structure which the Courtyard services. Tree spacing shall be a maximum of 25 feet on center.</p>	
Forecourt	Forecourts are open space areas which act as buffers between residential and non-residential buildings or Streets. Forecourts shall be credited toward Parks and Open Space requirements only for non-residential Use Patterns defined in Article 2 (Commercial Centers, Office or Institutional Campuses, and Commercial Retrofits), and shall be maintained in private ownership.	Forecourts shall be entirely bounded by Streets and shall be planted parallel to all Street right-of-ways with one tree species.	
Attached Squares	Attached Squares are areas for passive recreational use which are internal to a block.	<p>Squares shall be bounded by Streets on a minimum of three sides or 75% of their perimeter. Squares may be bounded by buildings on a maximum of 60% of their perimeter (maximum of 2 sides) in order to provide a central gathering area for the community.</p> <p>Squares shall be planted parallel to all rights-of-way with at least two (2) tree species a minimum of 10 feet and a maximum of 50 feet on center. All internal tree plantings (if provided) shall be in geometrical layouts.</p> <p>Minimum size: 2000 square feet Maximum size: 1 acre</p>	

(A) Park or Open Space Cate- gory	(B) Description	(C) Maintenance Requirements	(D) Illustration
Detached Square	Detached squares bordered on all sides by roads are particularly formal. Since adjacent buildings provide much of the population using any public space, detached squares are less likely to be used than other types though it remains appropriate as a means to symbolically enhance important places, intersections, or centers.	Detached Squares shall be planted along the perimeter of the Plaza or may be used to preserve a specimen tree or small stand of trees. The geometric pattern of the Square shall be square or a rectangle with a length not exceeding twice the width. Minimum Size: 200 sq ft Maximum Size: 1 acre	
Green	The green is an urban open space which is natural in its details. Like the square, it is small, civic, and surrounded by buildings. Unlike the square, it is informally planted and may have irregular topography.	Greens shall be landscaped with trees at the edges and open lawns at the center. Greens shall contain no structures other than benches, pavilions, and memorials. Trails or pedestrian pathways are optional.	

(A) Park or Open Space Cate- gory	(B) Description	(C) Maintenance Requirements	(D) Illustration
Park	<p>Parks may be designed for active recreational use. Parks create a central open space which services an entire neighborhood or group of neighborhoods, or incorporate physical features which are an asset to the community (i.e. lake or river frontage, high ground, or significant stands of trees).</p> <p>Parks may be combined with parkways and greenbelts.</p> <p>Parks shall include at least three (3) of the facilities listed in the "Basic Facilities Menu" for Neighborhood Parks in the Parks and Recreation System Plan (page 230).</p>	<p>Public parks shall be bounded by Streets on a minimum of 50% of their perimeter (subject to lot line configurations). Private Parks shall be bounded by Streets on 25% of their perimeter.</p> <p>Minimum size: 1 acre</p> <p>Trees shall be planted parallel to all perimeter rights-of-way with one species type, a minimum of 15 feet to a maximum of 50 feet on center.</p> <p>Promenades, and Esplanades within a park may be formally planted with trees parallel to the walkway. Areas under dense tree plantings shall be paved with crushed gravel. Interior portions of parks may be kept free of tree plantings. Areas for active recreational use and any facilities which accompany such use shall have a tree planting design which integrates the structures into the park and defines the areas set aside for active use from areas of passive use. Plantings in interior portions of parks are encouraged to follow topographical lines.</p>	
Parkway	<p>Parkways are open spaces designed to incorporate natural settings such as creeks and significant stands of trees within neighborhoods. Parkway and greenways differ from parks, plazas and squares in that their detailing is natural (i.e. informally planted) except along rights-of-way, and may contain irregular topography.</p>	<p>Parkways shall be entirely bounded by Streets or pedestrian rights-of-way within developed areas.</p> <p>Parkways may be used for certain active recreational uses such as walking, jogging, or bicycling.</p> <p>Trees shall be planted along all rights-of-way a minimum of 10 feet and a maximum of 50 feet on center, with one species type. Interior areas shall remain natural and any additional plantings shall be informal in design.</p>	

(Ord. No. 97568 § 1)

(6) Any excess capacity of a park or open space provided pursuant to this section may be credited toward the dedication required herein for another subdivision within a one-mile radius (subject to subsection (e)(1) of this section) or a benefit area for fees in lieu of dedication defined pursuant to subsection (c) of this section, where:

- A. the subdivision for which the credit is applied is under Common Ownership by the same Applicant; and

- B. the park/open space areas are accessible to each subdivision.

(Ord. No. 97568 § 2)

(c) Fee in Lieu of Land Dedication (Optional)

- (1) In lieu of dedicating and improving park or open space lands as required by this section, the applicant may deposit with the City a cash payment in lieu of land.
- (2) The Director of Parks and Recreation shall determine the amount to be deposited, based on the following formula:

$$A \times V = M$$

where

- A = the amount of land required for dedication as determined in subsection (b) of this Section.
- V = fair market value (per acre) of the property to be subdivided, as established by an appraisal.
- M = the number of dollars to be paid in lieu of dedication of land.

- (3) For purposes of computing fair market value of property (see "V" in the equation established in subsection (3), above), the subdivider may select one of the following fair market value determinations:
 - A. the current fair market value of the land as shown on the records of the tax appraisal district if based upon an appraisal that occurred within two years prior to the application; or
 - B. the current fair market value of the land as determined by a qualified real estate appraiser at the subdivider's expense, if the City Real Estate Manager certifies that the appraisal fairly reflects the land value; or
 - C. the current fair market value of the land as determined by a qualified real estate appraiser employed by the City; or
 - D. the actual purchase price of the property as evidenced by a purchase money contract, or a closing statement (within one year of the date of application).
- (4) The City shall reduce the in-lieu fee by the amount of any reasonable costs for any land which has been dedicated to and accepted by the City for park/open space facilities by the applicant within the proposed development, subject to the following:
 - A. The reasonable costs of the park/open space facilities that have been dedicated shall reduce the park/open space in-lieu fee due for only the same type of park facility.

35-503(c) continued

- B. The unit costs used to calculate the reduction shall not exceed those assumed as the average costs of the park/open space facilities which were used to compute the parks/open space in-lieu fee for the benefit area in which the property is located.
 - C. No reduction shall be granted that exceeds the park/open space in-lieu fee due for the development.
 - D. Any reduction created by the dedication of park/open space facilities shall expire ten years after the date that the offset was created.
 - E. An applicant may apply for a reduction of park fees either at the time of approval of a subdivision plat or at the time of dedication by separate instrument. The Applicant may appeal the determination of the Director of Parks and Recreation concerning the reduction to the City Council.
 - F. The amount of the reduction shall be prorated among the number of dwelling units approved for the development unless otherwise agreed to by the City.
- (5) Park/open space in-lieu fees shall be assessed at the time of plat approval and shall be paid at the time of plat recordation.
- (6) All fees collected shall be used for the acquisition or development of land for a neighborhood park, or development or construction of improvements to existing park land, within one (1) mile of the periphery of the proposed subdivision development. However, if [1] such acquisition opportunities are not available, or [2] existing park land is already developed or improved, within one (1) mile of the proposed subdivision development, then areas within two (2) miles of the periphery of the proposed subdivision development may be considered for the acquisition, of neighborhood park land and/or construction of improvements to existing park land within such periphery.
- (7) There is hereby established a special fund for the deposit of all fees collected under this subsection (c), which fund shall be known as the park acquisition and development fund. Within the fund, park development fees paid shall be earmarked for expenditure on park improvements in a neighborhood park generally located within the distance described in subsection (c) (6), above. All fees in lieu of park land dedication and all park development fees paid must be expended within ten (10) years from the date of receipt for park facilities benefiting the residential subdivision or dwelling unit for which the fees are paid. Fees shall be considered expended if they are spent for acquisition or development, respectively, of neighborhood parks located as per section (c)(6) above for which the fees were paid within the ten-year period. If fees are not expended within such period, the then-current owner shall be entitled to a refund of the principal deposited by the Applicant in such fund, together with accrued interest. The owner must request such refund in writing within three hundred sixty-five (365) days of entitlement or such right shall be waived. Interest accruing to the park land dedication fund and to the park development fund shall be expended on

neighborhood park land acquisition and for neighborhood park improvements, respectively.

(Ord. No. 97568 § 2: Ord. No. 98697 § 6)

(d) Park and Open Space Characteristics

(1) Generally

Land designated as a park or open space shall be maintained as a park or open space and may not be separately sold, subdivided, or developed except as provided below. Natural Areas, Greenways or Greenbelts shall not be cleared except as needed to provide Trails where permitted by § 35-503(b), above. The applicant shall provide at least one (1) acre of park /open space land if land is to be dedicated to the City, unless a fee in lieu is paid pursuant to subsection (c) of this Section.

(2) Designation

Any areas reserved as a park or open space shall be indicated on the Application for Development Approval. A Parks and Open Space Provision and Maintenance Plan shall be submitted as a part of the application for development approval including the project phasing schedule. This plan shall designate and indicate the boundaries of all proposed parks or open-space required by this Section. The plan shall:

- A. Designate areas to be reserved as a park or open space.
- B. Designate the type of park or open space that will be provided.
- C. Specify the manner in which the park or open space shall be perpetuated, maintained, and administered.

(3) School Site Locations

Park sites shall be located, whenever possible, adjacent to and contiguous with school sites in order to make maximum use of common facilities and grounds. Land area dedicated to a school district shall be credited toward the minimum requirements of subsection (b) of this Section if there is a joint use agreement between the City and the school district.

(Ord. No. 97568 § 2)

(e) Suitability

In order to ensure that all designated parks and/or open space has suitable size, location, dimension, topography and general character, and proper road and/or pedestrian access, as may be appropriate, to be usable parks and/or open space, the following standards shall apply.

35-503(e) continued

(1) Distance from lots

Parks and Open Space shall be not further than one (1) mile (5,280 feet) from any lot or, if the proposed development does not involve a subdivision, any primary building, measured from the entrance allowing people, bicycles or equestrians to enter into the park or open space or to view the park or open space area. The foregoing distance shall be measured in a straight line, provided that the distance shall not be interrupted by an existing Arterial Street or Freeway. The distance may be measured from a park or open space provided pursuant to this section, or a public park or public open space area not provided by the Applicant.

(2) Parks or Open Space in floodplains or water features

- A. Areas within a floodplain shall not exceed fifty percent (50%) of the area counted as Parks or Open Space pursuant to subsection (b), above, except as provided below.
- B. Water features exceeding 2,500 square feet shall not be considered as Parks or Open Space unless permitted by subsection C, below.
- C. The restriction on the maximum percentage of parks/open space in water features or floodplains (hereinafter "Restricted Areas") can be increased to seventy-five percent (75%) where:
 - 1. An area of not less than an average of twenty-five (25) feet in width surrounding a pond or adjacent to a floodplain is improved as a Greenway; and
 - 2. The structures or activities located with the Restricted Areas do not cause an increase in base flood elevations; and
 - 3. The velocities during a ten-year flood event do not exceed six (6) feet per second; and
 - 4. For parks/open space dedicated to the City, at least one (1) acre is outside of the floodplain.

(3) Percentage in retention or detention areas

Retention areas or detention basins which are required as part of the Stormwater Management Standards shall not qualify as a Park or Open Space area unless fifty percent (50%) or more of the active and usable area is above the twenty-five (25) year storm and is designed for multiple uses and the area(s) conforms to the requirements below.

- A. Retention or detention areas shall be included as part of a Greenbelt or a Greenway (see § 503-2, below). Retention or detention areas shall not be inundated so as to be unusable for their designated recreational purposes.
- B. Retention or detention areas shall be constructed of natural materials. Terracing, berming and contouring is required in order to naturalize and enhance the aesthetics of the basin. Basin slopes shall not exceed a three to one (3:1) slope.

(4) Landscaping

Parks or open space areas shall be landscaped where required by Table 503-2.

(5) Walls and Fences

Walls and fences, if used shall not exceed six (6) feet in height. This requirement shall not apply to fences used in conjunction with athletic fields and courts.

(6) Playground equipment

Playground equipment shall be located toward the interior of parks.

(7) Buffers (§ 35-510) or Landscaped Areas (§ 35-511)

Any buffer or landscaped area provided pursuant to § 35-510 or 35-511 of this Code which meets the requirements of Table 503-2 for a particular category of Parks or Open Space shall be credited toward the minimum Parks and Open Space requirements of subsection (b) hereto.

(8) Slopes

At least fifty (50) percent of required dedicated park or open space land shall have slopes not exceeding seven percent (7%).

(9) Access

Parks and/or open space provided pursuant to this Section shall have direct access to a public street or to a private street maintained by a Homeowners Association, Condominium Association, or Apartment Association.

(Ord. No. 97568 § 2)

(f) Designation of Parks/Open Space.

Areas designated as Parks or Open Space shall not be subdivided, but shall be shown as a "Park" or "Open Space" on a plat. In order to ensure that open-space areas are maintained so that their use and enjoyment as parks and/or open space are not diminished or destroyed, parks and/or open-space areas may be owned, preserved, and maintained by any of the mechanisms described in subsections (1) through (6) below, or combinations thereof. Land protected pursuant to this subsection which is intended to be used as a park shall be deeded as a park, regardless of ownership. The instruments creating the dedication, homeowners association, condominium association, easement, transfer, or improvement district shall be provided with the application for subdivision plat approval.

35-503(f) continued

(1) Dedication of Land to City

Dedication of the park or open space to the City shall satisfy the requirements of this subsection. Dedication shall take the form of a fee simple ownership. The City shall accept undivided parks and/or open space provided: (1) such land is accessible to the residents of the City; (2) there is no cost of acquisition other than any costs incidental to the transfer of ownership such as title insurance; and (3) the park/open space area meets the requirements of subsection (d)(1) of this Section.

(2) Homeowner's Association

- A. Common ownership of the parks and/or open space by a permanent homeowner's association which assumes full responsibility for its maintenance. The restrictive covenants shall provide that, in the event that any private owner of parks and/or open space fails to maintain same according to the standards of this Chapter, the Director of Parks and Recreation may, following reasonable notice and demand that deficiency of maintenance be corrected, enter the parks and/or open space to maintain same. The cost of such maintenance shall be charged to those persons having the primary responsibility for maintenance of the parks and/or open space. The association shall be formed and operated under the following provisions:
1. The developer shall provide a description of the association, including its bylaws and methods for maintaining the parks and/or open space.
 2. The association shall be organized by the developer and shall be operated with a financial subsidy from the developer, before the sale of any lots within the development.
 3. Membership in the association is automatic (mandatory) for all purchasers of homes therein and their successors. The conditions and timing of transferring control of the association from developer to homeowners shall be identified.
 4. The association shall be responsible for maintenance of insurance and taxes on undivided parks and/or open space, enforceable by liens placed by the City on the association. The homeowners' association shall be authorized under its bylaws to place liens on the property of residents who fall delinquent in payment of such dues or assessments. Such liens may require the imposition of penalty interest charges. Should any bill or bills for maintenance of undivided parks and/or open space by the City be unpaid by November 1 of each year, a late fee of fifteen percent (15%) shall be added to such bills and a lien shall be filed against the premises in the same manner as other municipal claims.

5. A proposed operations budget and plan for long term capital repair and replacement of the parks or open space shall be submitted with the final plat. The members of the association shall share the costs of maintaining and developing such undivided parks and/or open space. Shares shall be defined within the association bylaws. The operations and budget plan shall provide for construction of any improvements relating to the parks and/or open space within three (3) years following recordation of the plat.
 6. In the event of a proposed transfer, within the methods here permitted, of undivided parks and/or open space land by the homeowners' association, notice of such action shall be given to all property owners within the development.
 7. The association shall have or hire staff to administer common facilities and properly and continually maintain the undivided parks and/or open space.
- B. The homeowners' association may lease parks and/or open space lands to any other qualified person, or corporation, for operation and maintenance of park and/or open space lands, but such a lease agreement shall provide: (1) that the residents of the development shall at all times have access to the park and/or open space lands contained therein; (2) that the undivided parks and/or open space to be leased shall be maintained for the purposes set forth in this Chapter; and (3) that the operation of parks and/or open space facilities may be for the benefit of the residents only, or may be open to the residents of the City, at the election of the developer and/or homeowners' association, as the case may be. The lease shall be subject to the approval of the Board and any transfer or assignment of the lease shall be further subject to the approval of the Board. Lease agreements so entered upon shall be recorded with the County Recorder of Deeds within thirty (30) days of their execution and a copy of the recorded lease shall be filed with the City.
- C. Failure to adequately maintain the undivided parks and/or open space in reasonable order and condition constitutes a violation of this Chapter. The City is hereby authorized to give notice, by personal service or by United States mail, to the owner or occupant, as the case may be, of any violation, directly the owner to remedy the same within thirty (30) days.

(3) Condominiums.

The undivided parks and/or open space and associated facilities may be controlled through the use of permanent condominium agreements, approved by the City. Such agreements shall be in conformance with the Uniform Condominium Act, VTCA Property Code, Chapter 82. All undivided parks and/or open space land shall be held as a "common element." A proposed operations budget and plan for long term capital repair and replacement shall be submitted with the Application for Development Approval.

(4) Dedication of Easements.

The City may, but shall not be required to, accept easements for public use of any portion or portions of undivided parks and/or open space land, title of which is to remain in ownership by condominium or homeowners' association, provided: (1) such land is accessible to City residents; (2) there is no cost of acquisition other than any costs incidental to the transfer of ownership, such as title insurance; and (3) a satisfactory maintenance agreement is reached between the developer, condominium or homeowners' association, and the City. Land dedicated as a Natural Area, Greenway, or Greenbelt shall be subject to a duly executed conservation easement meeting the requirements of and enforceable in accordance with V.T.C.A., Natural Resources Code § 183.001 et seq., which easement shall be unlimited in duration.

(5) Transfer of Easements to a Private Conservation Organization.

An owner may transfer perpetual easements to a private, nonprofit organization, among whose purposes it is to conserve parks and/or open space and/or natural resources (such as a land conservancy), provided that:

- A. the organization is a bona fide conservation organization with perpetual existence;
- B. the organization is financially capable of maintaining such parks and/or open space;
- C. the conveyance contains legally enforceable provisions for proper reverter or retransfer in the event that the organization becomes unwilling or unable to continue carrying out its functions;
- D. the organization shall provide a proposed operations budget and plan for long term capital repair and replacement; and
- E. a maintenance agreement is entered into by the developer and the organization.

(6) Improvement Districts

An improvement district established pursuant to:

- A. the Public Improvement District Assessment Act, Tex. Local Gov't Code § 372.001 *et seq.*
- B. a Municipal Utility District established pursuant to Tex. Water Code, Chapter 54.
- C. Tax Increment Financing pursuant to Tex. Local Gov't Code, Chapter 374
- D. A development corporation established pursuant to Development Corporation Act, Tex. Rev. Civ. Stat. Ann. art 5190.6

(Ord. No. 97568 § 2; Ord. No. 98697 § 6)

(g) Development Phasing

- (1) The purpose of this subsection is to establish a procedure for enforcing the requirements for parks and open space through development phasing, while providing flexibility in the development approval process. This procedure recognizes that there is usually a delay between the date when a subdivision plat is approved and when lots are built upon and occupied, thereby creating a demand for parks and open space.
- (2) In residential subdivisions which are to be platted in two (2) or more phases, the required park or open space dedication, pursuant to this Section, must be provided in each phase of the subdivision except as provided in subsection (3), below.
- (3) If the subdivision is proposed in phases and the proposed park or open space is shown on a Master Development Plan, the applicant may plat the first 114 lots pursuant to the Master Development Plan and defer the provision of parks and/or open space to future phases of the development provided, however, that:
 - A. No further subdivision plat shall be approved unless and until parks or open space are provided in increments equal to the acreage required pursuant to subsection (b) of this Section, subject to the phasing provisions of Table 503-3 below; and

**Table 503-3
Parks and Open Space Requirements**

Number of lots per phase	Acres of Parks or Open Space Required	Timing of Improvements
Phase 1: 1-114	Up to 1 (minimum size of 1 acre)	Phase 2
Phase 2: 115-128	Up to 2	Phase 3
Phase 3 through completion of development	As required by subsection (b) of this Section	At time of platting

- B. If any phase of the subdivision is platted without providing the required parks or open space at the time of platting and no future subdivision phases are planned pursuant to the Master Development Plan, the parks or open space required shall be provided within one (1) year after recordation of the plat and shall be secured by deferment contract as provided in subsection (4). The failure to provide parks or open space as provided herein shall be deemed a violation of this Chapter and shall be enforceable as provided in § 35-494.

Example: A Master Development Plan is approved for 500 residential lots. The Applicant may secure plat approval for the first 114 lots without providing parks or open space. The Applicant files a plat for approval of a second phase containing 150 lots. The second phase may not be approved until at least one (1) acre of parks or open space is provided based on the number of lots approved in Phase 1.

- (4) The City shall authorize the developer to reserve park land for dedication in subsequent phases of the subdivision by executing an enforceable contract with the City. The contract shall be approved by the City Attorney and the Director of Parks and Recreation. In addition, the developer shall dedicate a reversionary public access easement on the final plat of the proposed development where necessary to provide effective public access, maintenance and use of any park land to be dedicated.

(Ord. No. 98697 § 1)

(h) Private Facilities

- (1) Where a park or open space area is provided in a proposed residential subdivision and such area is to be privately owned and maintained by the future residents of the subdivision, credit may be given to the Applicant where the following requirements are met:
- A. The park or open space shall be maintained as provided in subsection (f) of this Section. The ultimate owner of the parks and/or open space shall be responsible for raising all monies required for operations, maintenance, or physical improvements to the parks and/or open space through annual dues, special assessments, or similar arrangements.
 - B. The use of the private parks and/or open space is restricted for park and recreation purposes by recorded covenant, which runs with the land in favor of future owners of the property and which cannot be defeated or eliminated without the written consent of the City or its successors;
 - C. The proposed private parks and/or open space shall be reasonably adaptable for use for park and recreational purposes, taking into consideration such factors as size, shape, topography, geology, access and location.
- (2) The private parks and/or open space for which credit is given, or a combination of such and other recreational improvements that will meet the specific recreation park needs of the future residents of the area, shall conform to at least one of the elements of Table 503-4, Column (A). The element shall conform to the design criteria listed in Column (B) of Table 503-4. Credit shall be given toward the minimum land dedication requirement (see subsection (b) of this Section) at the rate specified in Column (C) of Table 503-4.
- (3) Private park facilities shall have a street or streets on 25% of the perimeter border of the park site.

Table 503-4
Private Park Facilities

(A) Criteria List	(B) Design Criteria	(C) Credit Acres
Playground	See Table 503-2 and subsection (3), below.	0.75
Picnic area.	Picnic areas shall have a minimum area of 5,000 square feet. A picnic unit is defined as a concrete or metal picnic table and two benches with an adjacent trash receptacle. Tables and benches are to be permanently anchored to the slab. If a cooking grill is to be installed, it must be pedestal mounted at a corner of the slab. Each park must contain a ratio of two picnic units per acre, with a minimum of two picnic units installed in each picnic area. A minimum of 50% of picnic tables must be accessible, as defined by the ADA and any implementing regulations.	0.50
Athletic Courts	The court slab shall have a slope not exceeding two percent (2%) and shall be constructed of concrete. A basketball court must be a minimum of fifty feet by forty feet, with two metal goals, nets, backboards, and poles at each end. A tennis court must be a minimum of sixty feet by one hundred twenty feet, with metal net and posts.	0.50
Open Play Areas	An Open Play Area shall include a minimum area of 20,000 square feet per three (3) acres. The areas shall be unobstructed by trees, shrubs, or utilities, with a slope not to exceed five percent (5%). Common Bermuda grass shall be established in these areas.	Ratio of 4 square feet for every 1 square foot provided
Swimming pool	Minimum 2,500 square feet, with adjacent deck and lawn areas.	2.50
Recreation Center Building	The building shall be in habitable condition and shall have a minimum 1,000 square feet of gross floor area. The covenants and restrictions of the homeowner's association shall restrict the building for use as a recreational and/or meeting area for use by all residents of the subdivision. Architectural design shall conform to the restrictive covenants recorded for the subdivision.	1.50
Recreation community gardening	Community gardens shall have a minimum area of 10,000 square feet with a slope not exceeding two percent (2%).	0.25
Jogging or walking trails	Trails shall have a minimum length of one-quarter mile. Trails shall be constructed of either crushed granite or asphalt, with a minimum thickness of four inches, a minimum width of 8 feet, and shall be sloped to drain.	1.50

- (4) Specifications for playgrounds as set forth in Table 503-4 shall conform to the following minimum requirements:
- A. The playground area shall have a slope not exceeding two percent (2%).
 - B. Playgrounds are to include equipment for two distinct play abilities, one designed for ages 2 – 5 years old, and the second designed for

ages 5 – 12 years old. The equipment may be located in the same or in separate areas.

- C. A transfer station required by the Americans with Disabilities Act (ADA) and the actual playscape structure (posts and railings) may not be included as one of the required activities.
- D. The following items shall be provided: at least two park benches and one trash receptacle.

(Ord. No. 97568 § 2)

(i) Connectivity

The City hereby finds and determines that an interconnected system of parks, trails, greenways, and bikeways provides a greater public benefit than isolated parks with access exclusively by automobiles. Such areas can provide form to neighborhoods, a common public gathering space, and an opportunity to protect natural areas. Accordingly, this section provides incentives for developers to link parks and open space provided pursuant to this section with park and open space areas provided pursuant to subsection (b) of this section. It is not the intent of this section to require developers or landowners to provide a general public benefit, but rather to create incentives for creativity in the design of parks and open space as well as creative opportunities to meet the requirements of this section.

- (1) Greenbelts, Greenways, or Linear Parks provided pursuant to this Section shall be credited toward the minimum park and open space area requirements of subsection (b) of this Section at a ratio of one acre for every 20,000 square feet provided, where:
 - A. Such areas are aligned with an area designated as a public greenway, linear park, or similar facility in a facilities plan officially adopted by the City Council; and
 - B. Such areas include sidewalks, trails, or similar facilities which align with such facilities in an adjoining tract or, where adjoining tracts are unimproved, conform to the specifications set forth in the facilities plan.
- (2) Parks or Open Space provided pursuant to this subsection shall be credited toward the minimum park and open space area requirements at a ratio of one (1) acre for every 20,000 square feet provided, where:
 - A. all lots within the proposed subdivision are within one-quarter (1/4) mile of the park or open space, and
 - B. the park or open space area adjoins an area zoned "NC", "C-1," "TOD" or the area designated as a "Center" in a Traditional Neighborhood Development.

Table 503-2: Park and Open Space Categories

35-504 Storm Water Management

The purpose of this Section is to provide adequate measures for the retention, detention and distribution of stormwater in a manner that minimizes the possibility of adverse impacts on both water quantity and water quality during development. This Section implements the following policies of the Master Plan:

- *Natural Resources, Policy 1d: Encourage retention of the 100-year floodplains as natural drainage ways without permanent construction, unnecessary straightening, bank clearing or channeling.*
- *Natural Resources, Policy 1d: Adopt strong stormwater management practices throughout the drainage area which include site specific measures such as-*
 - on-site stormwater retention and detention*
 - reduction in impervious cover*
 - natural bank contouring*
 - floodplain preservation and buffering*
 - preservation of riparian habitat*
 - stormwater harvesting sites for reuse purposes*
- *Urban Design, Policy 1g: Prepare design and construction policies and standards for utility and transportation infrastructure, capital improvement projects, public facilities and development projects that reinforce neighborhood centers and provide diverse, pedestrian-friendly neighborhoods.*

(a) Applicability

The provisions of this Section shall apply to any application for Subdivision Plat, Master Development Plan, or Building Permit approval except as otherwise provided by this Chapter. A Stormwater Management Plan shall be provided as set forth in Appendix B, § 35-B119 of this Chapter.

(b) Storm Water Management Program

(1) Regional stormwater management program (RSWMP).

- A. The City of San Antonio has determined that regional stormwater management is preferable to site specific stormwater mitigation. The regional stormwater management program provides for the administration, planning, design, construction, and operational management of regional storm water facilities (RSWF). Regional storm water management uses a watershed-wide approach to analyze potential flooding problems, identify appropriate mitigation measures and select site locations and design criteria for RSWF. These RSWF include, but are not limited to, regional detention and retention ponds, watershed protection, land purchase, waterway enlargement,

channelization, and improved conveyance structures. The regional storm water management program allows developers to participate in the program rather than constructing the on-site detention controls required by this Section, where the resulting use of a RSWF will not produce a significant adverse impact to other properties due to the increased runoff from the proposed development.

- B. Options available to developers to participate in the RSWMP include:
1. Payment of a fee in lieu of on-site detention. The fee schedule is included in Appendix C-109.
 2. Construction of a RSWF to mitigate an existing flooding problem.
 3. Construction or participation in the construction of a RSWF to mitigate increased storm water runoff anticipated by ultimate development of the watershed.
- C. To determine a significant adverse impact for the purposes of this section, the following criteria will be used to analyze the receiving storm water facility for 2000 linear feet downstream of the project or to the nearest downstream RSWF, whichever is less. (The 2000 linear feet is based on an estimate that this length will approximate a 100-acre drainage area. The 100-acre drainage area represents the lower limit for a 100-year frequency storm water facility design.)
1. The design storm water surface elevation (DSE) in the receiving storm water facility may not be increased within the 2000 linear feet from the development unless the increased DSE is contained within an easement or right-of-way or the receiving facility has sufficient capacity to contain the increased DSE without increasing flooding to a habitable structure.
 2. Where low water crossings exist within the study area, the DSE cannot be increased above the level of the 100-year ultimate development water surface at the low water crossing. The increase in flow at the low water crossing for the 5-year, 25-year and 100-year frequency design must not reclassify the low water crossing from a safe to a dangerous condition crossing based on Figure 504-2. If the increased DSE exceeds this criterion, the development can improve the low water crossing to the standards of this chapter in lieu of providing for onsite controls or paying a fee.
 3. Where a development is upstream of an existing San Antonio River Authority (SARA) flood control facility or other detention facility constructed prior to 2000, an analyses will be provided to insure that capacity exists within the facility to accommodate the increased runoff from the proposed development.
 4. The City of San Antonio may reject a developer's request to participate in the RSWMP and require on-site detention. The City's decision will be based on the knowledge of significant adverse impacts that would be created within the watershed by the proposed

development regardless of the distance from the development to the area impacted. The City may also

reject a request for participation when it is not in the best interests of the RSWMP. The developer is recommended to meet with the Storm Water Engineering Section of the Storm Water Utility to discuss participation options prior to commencing a project. This preliminary meeting in no way relieves the developer of his responsibility to prepare the necessary engineering documentation to support his request for participation.

- D. The storm water development fee in lieu of on-site detention must be paid prior to a plat being released for recordation by the City of San Antonio or the issuance of a building permit. The fee shall be determined in accordance with the provisions of Appendix C of this Code.

(2) System Criteria

- A. All Stormwater Management Facilities, or combination of facilities, shall be designed for ultimate development. Facilities with drainage areas under 100 acres shall be designed for a 25-year storm. Facilities with drainage areas over 100 acres or areas within a designated floodplain shall be designed for a 100 year storm or a 25 year storm plus freeboard (based on Table 504-9) if that elevation is higher. Detention facilities and streets are exceptions to the frequency criteria cited above. Detention facility outflows will be designed for 5-year, 25-year and 100-year frequency storms. Refer to § 35-504(g) for specific drainage design criteria for streets.
- B. Three development conditions shall be analyzed for each development.
 - 1. Existing Conditions. This refers to current development conditions in the watershed and on site. Use as the baseline analysis for determining the impact of development.
 - 2. Proposed Conditions. This refers to existing conditions with the proposed development added. Use to determine if the increased runoff from the proposed development results in an adverse impact to other properties.
 - 3. Ultimate Conditions. This refers to ultimate development conditions within the watershed used to design the drainage facilities. This condition may be used in lieu of subsection 2, above, to determine if the increased runoff from the ultimate watershed development results in an adverse impact to other properties.

(3) Responsibility to Accept Stormwater

The owner or developer of property to be developed shall be responsible for the conveyance of all stormwater flowing through the property. This responsibility includes the stormwater flowing onto the property by any other developed property as well as the drainage naturally flowing through the property by reason of topography. Future upstream development shall be

35-504(b) continued

accounted for by assuming ultimate development when sizing drainage systems as specified in this Section.

(4) Positive Overflow Pathways

Stormwater Management Facilities for local drainage systems will be designed to ensure that a positive overflow pathway is provided to the nearest 100-year conveyance facility. The overflow pathway must be delineated on a plan that shows all existing structures in the vicinity impacted by the overflow pathway.

(5) Maintenance

- A. Maintenance of publicly owned facilities will be the responsibility of the City. Maintenance of private facilities is the responsibility of the property owner or the community association and must be specified in the maintenance schedule submitted to the City. A maintenance schedule for both publicly owned and privately owned facilities must be approved by the Director of Public Works prior to the approval of construction drawings.
- B. Authorized personnel from the City of San Antonio shall conduct periodic inspections of these facilities and structures. Any required repairs will be consistent with current construction standards. Maintenance issues identified by the City or State during inspections shall be the responsibility of the current owner.

(6) New development

Peak stormwater runoff rates from all new development shall be less than or equal to the peak runoff rates from the site's predevelopment conditions for the 5-year, 25-year and 100-year design storm events, except as provided in § 35-504(b)(1), above.

(7) Redevelopment

Peak stormwater runoff rates from an area of redevelopment due to zoning or replatting shall be less than or equal to the peak runoff rates produced by existing development conditions for the 5-year, 25-year and 100-year design storm events, except as provided in § 35-504(b)(1), above.

(Ord. No. 97568 § 2)

(c) Method of computing runoff.**(1) Calculation Methods**

- A. For drainage areas less than six hundred forty (640) acres, the basis for computing runoff shall be the Rational Formula or some other method provided it is acceptable to the Director of Public Works. Hydraulic

calculations shall be performed by using the U.S. Army Corps of Engineers HEC-2 "Water Surface Profiles" or HEC-RAS "River Analysis System" computer models. Normal depth channel calculations are permissible for constructed open channels with a uniform geometric cross section where 1) there is no potential for the water surface elevations to be controlled by backwater and 2) the channel is not in a FEMA floodplain.

- B. For drainage areas six hundred forty (640) acres or greater, the basis for computing runoff shall be a unit hydrograph method, preferably the Soil Conservation Service (SCS) Dimensionless Unitgraph method as contained in the U.S. Army Corps of Engineers Hydrologic Engineering Center HEC-1 "Flood Hydrograph Package," which document shall be maintained on file with the Director of Public Works and is hereby incorporated by this reference. For the SCS method, antecedent moisture condition II shall be used in the runoff model. Design rainfall values listed in Table 504-4 shall be used for hydrograph calculations.
- C. Open channel hydraulic calculations shall be performed by using the U.S. Army Corps of Engineers HEC-2 "Water Surface Profiles" or HEC-RAS "River Analysis System" computer models, which documents shall be maintained on file with the Director of Public Works and is hereby incorporated by this reference.
- D. Certain watersheds have hydrologic and hydraulic models that are available through and maintained by the City of San Antonio. Developments proposed within the limits of these watersheds must have the models updated by the consultant to reflect changes in flow, channel configuration (including alterations to vegetation) and channel structures. The consultants' models must use the same computer program that was used in the existing model e.g. HEC-RAS models will not be accepted where the original model used HEC-2. The updated models shall be submitted to the Director of Public Works for incorporation into the master models. The City of San Antonio will periodically update the master models to reflect current watershed development conditions. The updated models will be made available for use and distribution as the latest existing condition models for the watershed.

(2) Time of Concentration

- A. Overland (sheet) flow, shallow concentrated flow and channel flows are components that need to be considered in the calculation of time of concentration. The following methods are recommended for time of concentration calculation.
- B. Overland flow – flow over plane surfaces: Maximum allowable time is 20 minutes. Minimum is 5 minutes. The Overland Flowtime chart from "Design" by Elwyn E. Seelye may be used to calculate overland flow times. Note that the minimum time has been reduced to 5 minutes.

35-504(c) continued

- C. Shallow concentrated flow – overland flow usually becomes shallow concentrated flow after a maximum of 300 feet: Use Manning's equation to estimate travel time for defined swales, bar ditches and street sections, etc. Figure 3-1 from TR-55 "Urban Hydrology for Small Watersheds", SCS 1986, may be used where a geometric section has not been defined.
- D. Channel flow: Use existing computer models where available or Manning's equation if data is not available. Non-floodplain channel velocities for ultimate watershed development should not be less than 6 fps when estimating time of concentration.

(3) Runoff Coefficients

Runoff coefficients (C value) for use in the Rational Formula shall not be less than the values shown in Tables 504-1A or 504-1B, as appropriate.

Table 504-1A
Runoff Coefficients (C) - Percentage

Character of Area	SLOPE			
	Up to 1%	Over 1% up to 3%	Over 3% up to 5%	Flow over 5%
Business or commercial areas (90% or more impervious), Existing Pavement / Buildings or Zoning Districts O, C, I-1, I-2	95	96	97	97
Densely developed areas (80% to 90% impervious) or Zoning Districts D, MX, NC, TOD, Use Pattern TND	85	88	91	95
Closely built residential areas and school sites or Zoning Districts MF, R-4	75	77	80	84
Undeveloped areas * – Present land is undeveloped and ultimate land use is unknown. C values for use in ultimate development calculations.	68	70	72	75
Large lot residential area or Zoning Districts R20, RE	55	57	62	64
Undeveloped areas * – Existing conditions. See Table 504- 1(b)				
Average residential area or Zoning Districts R-5, R-6	65	67	69	72

(Ord. No. 97568 § 2)

Table 504-1B
Runoff Coefficients (C) - Percentage

Character of Area	SLOPE			
	Up to 1%	Over 1% up to 3%	Over 3% up to 5%	Flow over 5%
Cultivated or Range (Grass Cover < 50% of Area)	44	47	53	55
Range (Grass Cover 50-75% of Area)	37	41	49	53
Forest or Range (Grass Cover > 75% of Area)	35	39	47	52

* Areas included within parks, green belts or regulatory floodplains shall be considered to remain undeveloped per Table 504-1B.

Ord. No. 97568 § 2)

(4) Rainfall Intensity

Use Figure 504-1 or Table 504-2 to determine rainfall intensity.

Table 504-2 Rainfall Intensities (inches / hour)

TIME MINUTES	FREQUENCY						
	2 YEAR	5 YEAR	10 YEAR	25 YEAR	50 YEAR	100 YEAR	500 YEAR
1	6.94	8.00	8.84	9.99	11.09	11.92	13.55
2	6.69	7.72	8.53	9.67	10.69	11.53	13.24
3	6.45	7.46	8.24	9.36	10.31	11.15	12.93
4	6.22	7.21	7.95	9.05	9.95	10.79	12.62
5	6.00	6.96	7.68	8.76	9.60	10.44	12.30
6	5.79	6.73	7.42	8.48	9.27	10.10	11.98
7	5.59	6.50	7.17	8.20	8.95	9.78	11.66
8	5.40	6.28	6.93	7.94	8.65	9.47	11.34
9	5.21	6.08	6.70	7.69	8.37	9.17	11.01
10	5.04	5.88	6.48	7.44	8.10	8.88	10.68
11	4.88	5.69	6.27	7.21	7.85	8.61	10.35
12	4.72	5.52	6.08	6.98	7.61	8.35	10.02
13	4.58	5.35	5.89	6.76	7.39	8.10	9.68
14	4.45	5.19	5.72	6.56	7.19	7.86	9.34
15	4.32	5.04	5.56	6.36	7.00	7.64	9.00
16	4.22	4.94	5.46	6.26	6.89	7.53	8.89
17	4.12	4.84	5.36	6.16	6.79	7.42	8.78
18	4.03	4.75	5.27	6.06	6.68	7.31	8.68

TIME	FREQUENCY						
MINUTES	2 YEAR	5 YEAR	10 YEAR	25 YEAR	50 YEAR	100 YEAR	500 YEAR
19	3.94	4.66	5.17	5.96	6.58	7.20	8.57
20	3.85	4.56	5.08	5.86	6.48	7.09	8.47
21	3.76	4.48	4.99	5.77	6.38	6.99	8.36
22	3.67	4.39	4.90	5.68	6.28	6.88	8.26
23	3.59	4.30	4.82	5.59	6.18	6.78	8.16
24	3.51	4.22	4.73	5.50	6.09	6.68	8.06
25	3.43	4.14	4.65	5.41	6.00	6.58	7.96
26	3.35	4.06	4.57	5.33	5.91	6.49	7.86
27	3.27	3.98	4.49	5.24	5.82	6.39	7.76
28	3.20	3.91	4.41	5.16	5.73	6.30	7.67
29	3.13	3.83	4.33	5.08	5.64	6.21	7.57
30	3.06	3.76	4.26	5.00	5.56	6.12	7.48
31	2.99	3.69	4.19	4.92	5.48	6.03	7.39
32	2.93	3.62	4.12	4.85	5.40	5.95	7.30
33	2.87	3.56	4.05	4.77	5.32	5.86	7.21
34	2.81	3.49	3.98	4.70	5.24	5.78	7.12
35	2.75	3.43	3.92	4.63	5.17	5.70	7.03
36	2.69	3.37	3.86	4.56	5.09	5.62	6.94
37	2.64	3.31	3.80	4.50	5.02	5.54	6.86
38	2.59	3.26	3.74	4.43	4.95	5.47	6.77
39	2.54	3.21	3.68	4.37	4.88	5.40	6.69
40	2.49	3.15	3.62	4.31	4.82	5.32	6.61
41	2.45	3.10	3.57	4.25	4.75	5.25	6.53
42	2.40	3.06	3.52	4.19	4.69	5.19	6.45
43	2.36	3.01	3.47	4.13	4.63	5.12	6.37
44	2.32	2.97	3.42	4.08	4.57	5.05	6.29
45	2.29	2.92	3.37	4.02	4.51	4.99	6.21
46	2.25	2.88	3.33	3.97	4.45	4.93	6.14
47	2.22	2.85	3.29	3.92	4.40	4.87	6.06
48	2.19	2.81	3.25	3.87	4.34	4.81	5.99
49	2.16	2.78	3.21	3.83	4.29	4.76	5.92
50	2.14	2.74	3.17	3.78	4.24	4.70	5.85
51	2.11	2.71	3.13	3.74	4.19	4.65	5.78
52	2.09	2.69	3.10	3.70	4.15	4.60	5.71
53	2.07	2.66	3.07	3.66	4.10	4.55	5.64
54	2.06	2.63	3.04	3.62	4.06	4.50	5.58
55	2.04	2.61	3.01	3.59	4.02	4.45	5.51
56	2.03	2.59	2.99	3.55	3.98	4.41	5.45
57	2.02	2.57	2.96	3.52	3.94	4.37	5.38
58	2.01	2.56	2.94	3.49	3.91	4.33	5.32
59	2.00	2.54	2.92	3.46	3.87	4.29	5.26
60	2.00	2.53	2.90	3.43	3.84	4.25	5.20
120	1.10	1.54	1.83	2.21	2.50	2.78	3.48
180	0.86	1.19	1.41	1.68	1.88	2.08	2.53
240	0.70	0.97	1.13	1.33	1.50	1.65	1.99

TIME	FREQUENCY						
MINUTES	2 YEAR	5 YEAR	10 YEAR	25 YEAR	50 YEAR	100 YEAR	500 YEAR
360	0.51	0.71	0.83	0.98	1.09	1.19	1.41
720	0.28	0.39	0.46	0.55	0.61	0.67	0.81
1440	0.165	0.227	0.273	0.324	0.366	0.413	0.513

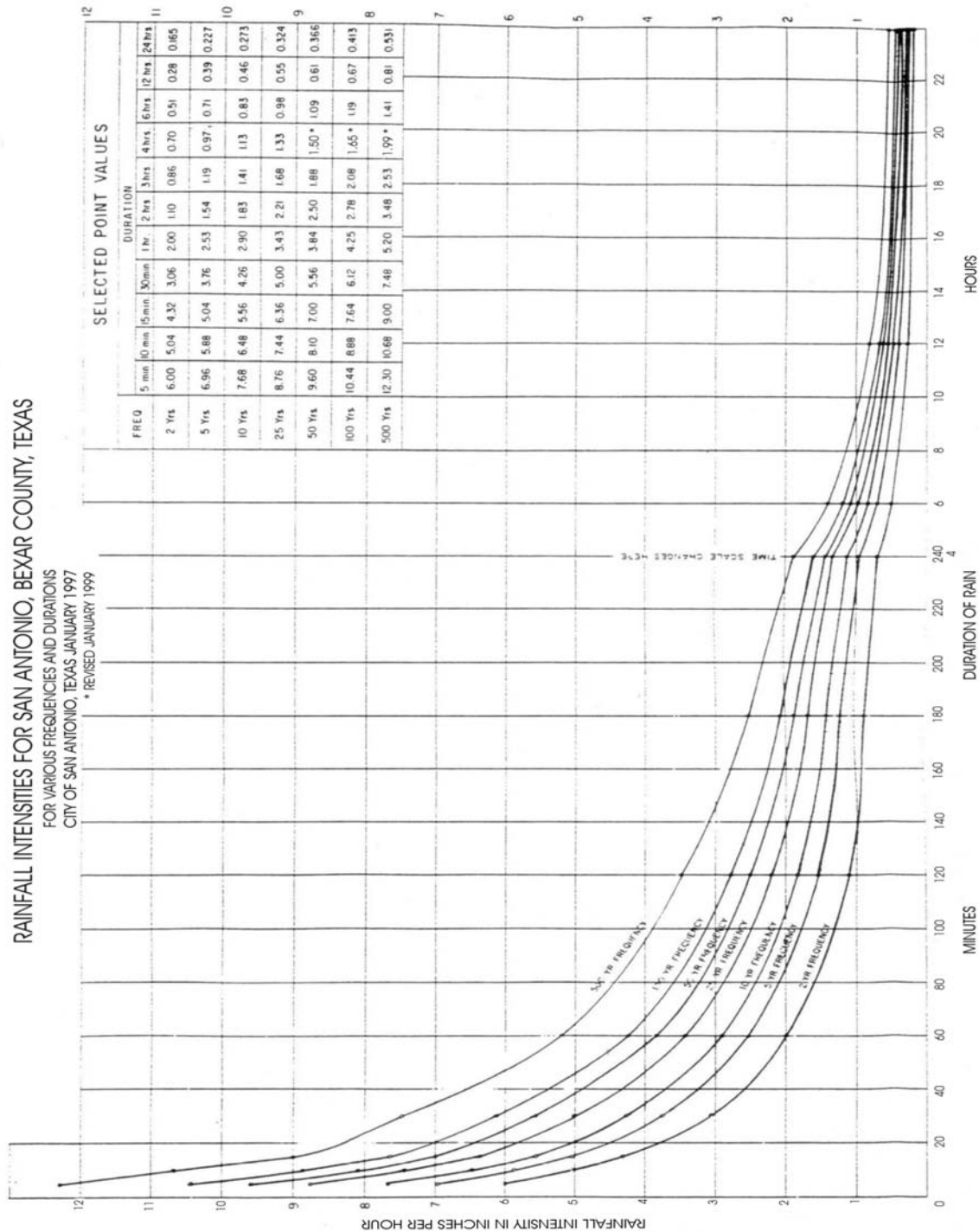


Figure 504-1

(5) SCS Curve Numbers

The SCS Curve Numbers adopted for use by the City of San Antonio are shown in Table 504-3. The hydrologic soil groups are listed in the latest version of the United States Natural Resources Conservation Service [formerly the Soil Conservation Service], "Urban Hydrology for Small Watersheds", Technical Release No. 55 (TR 55) which document is hereby incorporated by this reference. Soil types that relate to the hydrologic soil group may be found in the latest version of the United States Natural Resources Conservation Service "Soil Survey-Bexar County, Texas" which document is hereby incorporated by this reference. Soil types may also be based on a Geotechnical Engineering Report.

Table 504-3
SCS Curve Number by Soil Type

Hydrologic Soil Group	Description	SCS Curve Number
A	Soils having a low runoff potential due to high infiltration rates. These soils consist primarily of deep, well drained sand and gravels.	25
B	Soils having a moderately low runoff potential due to moderate infiltration rates. These soils consist primarily of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures.	55
C	Soils having moderately high runoff potential due to slow infiltration rates. These soils consist primarily of soils in which a layer exists near the surface that impedes the downward movement of water or soils with moderately fine to fine texture.	70
D	Soils having a high runoff potential due to very slow infiltration rates. These soils consist primarily of clays with high swelling potential, soils with permanently high water tables, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious parent material.	77

(6) Percent Impervious Cover

The percent impervious cover for typical land use types in San Antonio are presented in Table 504-4.

Table 504-4
Percent Impervious Cover by Land Use

Land Use Category		Average Percent Impervious Cover
Residential	1/8 acre Residential Lots, or Garden or Townhouse apartments, or Zoning Districts R-4, R-5, RM-4, RM-5; TND/TOD Use Patterns	65-85%
	¼ acre Residential Lots or Zoning District R-6, RM-6	38%
	1/3 acre Residential Lots or Zoning District R-15	30%
	½ acre Residential Lots or Zoning Districts R-20	25%
	1 acre Residential Lots or Zoning Districts RP, RE	20%
Industrial or Zoning Districts L, I-1, I-2		72-85%
Business or Commercial, or Zoning Districts NC, O, C		85-95%
Densely developed (apartments), or Zoning Districts MF		65-85%
Streets, Roads, and Parking Areas		98%

(7) Design Rainfall

A twenty-four-hour rainfall distribution shall be applied for runoff calculations. Rainfall intensities as adopted for the City of San Antonio are given in Table 504-5 and should be used for HEC-1 input. The lag value for a sub area shall be calculated as 0.6 times the time of concentration.

Table 504-5
Design Rainfall Values (inches)

Duration	Frequency					
	5-year	10-year	25-year	50-year	100-year	500-year
5 minute	0.58	0.64	0.73	0.8	0.87	1.03
15 minute	1.26	1.39	1.59	1.75	1.91	2.25
60 minute	2.53	2.9	3.43	3.84	4.25	5.2
2 hour	3.08	3.66	4.42	4.99	5.57	6.95
3 hour	3.57	4.23	5.04	5.64	6.23	7.6
6 hour	4.26	4.99	5.89	6.52	7.13	8.47
12 hour	4.68	5.55	6.58	7.32	8.05	9.68
24 hour	5.45	6.55	7.78	8.78	9.91	12.75

(8) Routing of runoff

Routing of the runoff hydrograph through the channel from one sub area calculation point to the next in the HEC-1 shall be computed using one of the following methods:

- A. Overbank/Channel storage not significant: Use Normal depth channel routing.
- B. Overbank/Channel storage is significant: Use the Muskingum method where a hydraulic model is not available. Use Modified Puls Storage method where a hydraulic model is available to develop storage/out flow relationship.

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- C. Kinematic wave method for channel reaches where inflow from overbank runoff or multiple point sources (Example: storm sewer outfalls) is significant and where hydrograph attenuation is insignificant.

Channel routing methodologies currently being applied in the existing HEC-1 model of the watershed shall not be replaced with a different methodology without approval or direction from the Director of Public Works.

(9) Manning's Roughness Coefficient

Manning's roughness coefficients ("n" values) for use in routing methods or in hydraulic calculations shall be consistent with the values listed in Table 504-6

**Table 504-6
Manning's Roughness Coefficient**

Channel Description	Manning's "n" Value
Concrete Lined Channel	0.015
Grass Lined Channel with regular maintenance	0.035
Grass Lined Channel without recent maintenance	0.050
Vegetated Channel with trees, little or no underbrush	0.055
Natural Channel with trees, moderate underbrush	0.075
Natural Channel with trees, dense underbrush	0.090
Natural Channel with dense trees and dense underbrush	0.100

Overbank Description	Manning's "n" Value
Pasture	0.035-0.055
Trees, little or no underbrush, scattered structures	0.060-0.075
Dense vegetation, multiple fences and structures	0.075-0.090

The N value to be used in Manning's Formula shall conform to the following for design purposes:

- A. Earth channels--0.035
- B. Concrete lined channels--0.015
- C. Reinforced concrete pipe--0.013
- D. Concrete box culverts--0.013
- E. Corrugated metal pipe:
- F. Unpaved 1/2" corrugated--0.024
- G. Unpaved 1" corrugated--0.027

Any other N value shall be based on generally accepted engineering principles.

(Ord. No. 97568 § 2)

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(d) Drainage easements / Rights-of-way.**(1) Applicability**

Where a subdivision is traversed by a watercourse, drainage way, natural channel or stream, there shall be provided an easement or right-of-way conforming substantially to the limit of such watercourse, plus additional width as outlined below.

(2) Requirements

Easement or right-of-way requirements are specified in the following subsections of this Section for particular Stormwater Management facilities –

- A. (d)(3) Natural Watercourses or Floodplains
- B. (f)(3) Regional Detention Facilities
- C. (h)(6)(e) Concrete Lined Channels
- D. (h)(7)(c) & (d) Vegetated Earth Channels
- E. (i)(c) Storm Sewers

(3) Natural Watercourses or Floodplains

Easements for natural watercourses shall be the 100-year floodplain or the 25-year plus freeboard (see Table 504-9 of this Section) whichever is greater. In floodplain areas where ongoing maintenance is required or the floodplain will be reserved for use by the public, the drainage easements shall be maintained by a public entity and the property will be dedicated to the City as a multi-use drainage easement. A drivable access way shall be provided in floodplain easements for the length of the easement when regular maintenance of the floodplain is required.

(4) Maintenance Access Right-of-Way

An unobstructed access right-of-way connecting the drainage easement with an alley or roadway parallel to or near the easement shall be provided at a minimum spacing of one access right-of-way at approximately one-thousand (1000) foot intervals. The access right-of-way shall be a minimum of fifteen (15) feet in width and shall be maintained clear of obstructions that would limit maintenance vehicular access. If the flow line of the designed channel incorporates grade control structures or vehicular bridges that would prevent maintenance equipment from accessing that portion of the channel, additional access points may be required. Channel design, earthen or concrete, shall have ramps in the side slopes near the access points that would allow maintenance equipment to descend to the floor level of the channel. The maximum allowable ramp slope for vehicular access is 7:1. Access points adjacent to roadways or alleys shall be provided with a post and cable feature with padlock to prevent unauthorized use.

35-504(d) continued**(5) Lot and Property Line Crossings**

In those cases where drainage easements cross lot and property lines, a statement shall be added to the plat that no fencing or structures that will interfere with adequate drainage flow will be allowed on or across such lines. Fencing may be allowed across drainage easements only in accordance with the following restrictions:

- A. Bottom of fence shall be a minimum of the flow depth, plus freeboard (see Table 504-9 of this Section) above design flow line of channel or drain.
- B. A hinged gate will be placed across the entire width of the drainage easement.
- C. Fence posts located within the easement must be structurally designed to resist damage from the storm water flows and impact from debris.
- D. A floodplain development permit will be required to construct a fence within an easement within the 100-year floodplain.

(6) Interceptor easements

Interceptor drainage easements and channels shall be provided where the drainage area to the back of platted lots exceeds the depth of two average residential lots. Interceptor drains shall be constructed prior to the issuing of building permits on any lot that would be affected by natural drainage being intercepted.

(7) Lower elevation of Site

All developments shall provide for adequate drainage outfall at the lower end of the site into an existing street, alley, drainage, easements or right-of-way, or to the centerline of an existing natural drain. Where proposed street, storm sewer, or open channel does not discharge into a natural low or into an existing adequate drainage easement then facilities and drainage easements of adequate width to contain the design discharge shall be constructed and dedicated to the centerline of an existing natural low within the same watershed. However, where the natural low lies within the developer's property, the developer will be required only to plat an easement to the centerline of the natural low, provided that the easement is adequate to accommodate the facilities that will be built in conjunction with the future development of that property.

(Ord. No. 98697 § 6)

(e) Site Design and Grading

- (1) All land disturbing or land filling activities or soil storage shall be undertaken in a manner designed to minimize surface runoff, erosion and sedimentation, and to safeguard life, limb, property and the public welfare in accordance with the NPDES (TPDES) Construction Site Regulation Ordinance, Ordinance No. 94002, as amended, and the document entitled "Complying with the Edwards Aquifer Rules;

Technical Guidance on Best Management Practices, " by Michael E. Barrett, Ph.D., P.E. Center for Research in Water Resources, Bureau of Engineering Research, University of Texas at Austin, (RG-348, June 1999), which documents are hereby incorporated by this reference.

- (2) A note must be placed on the plat for residential lots, which states that finished floor elevations must be a minimum of eight (8) inches above final adjacent grade. A grading plan shall be prepared and submitted to the City of San Antonio, which indicates typical lot grading for all lots in the subdivision using typical FHA lot grading types (A, B & C). A more detailed grading plan is also acceptable. No more than two average residential lots may drain onto another lot unless a drainage easement is dedicated to contain the runoff.

(Ord. No. 97568 § 2)

(f) Stormwater detention

For projects with an increased impervious area of greater than 0.1 acres, that elect not to participate or are not eligible to participate in the Regional Storm Water Management Program as described in Section 35-504 (b)(1), then storm water detention shall be required for all new developments or redevelopment of individual parcels of property to mitigate peak flow rates to predevelopment or existing development conditions as stated in subsections (b)(6) and (b)(7) of this Section.

(1) Maximum outflow rate

The maximum allowable outflow rate from the detention facility must be restricted to the flow rate from the undeveloped or existing development tract for the 5-year, 25-year and 100- year frequency. Best management practices shall be used in the design of detention facilities in accordance with this Section. The timing of the hydrograph released from the detention facility must be checked against the timing of the flow rate in the first open watercourse to prevent any increase in the peak flow rate in the receiving watercourse. For detention basins constructed in-line on an existing watercourse, the creation of the basin shall not increase flood elevations in the channel upstream of the new development boundaries.

(2) On-site detention

On-site detention facilities must be privately owned and shall be maintained by the community association or property owner. A maintenance schedule shall be submitted to the public works department and approved by the Director of Public Works prior to approval of construction plans. The City of San Antonio will have the right to do periodic inspections of privately owned and maintained detention facilities to ensure that the maintenance schedule is being implemented.

Where a detention facility accepts flows from public facilities such as City right-of-ways, the detention facility will be considered a detention facility serving a public purpose and will be dedicated to the City upon completion and a drainage easement will be dedicated to provide

for access to the facility. When a regional detention facility accepts flow from an area exceeding 300 acres, the facility shall be considered serving a public purpose and shall be dedicated to the City.

(3) Regional Detention Facilities

- A. General locations and sizes of regional detention facilities have been identified in the master drainage plan for the major watersheds in the City's jurisdiction. The ownership of regional detention facilities may either be public or private. The creation of regional detention facilities designed to service one or several developments is encouraged, but not required. In watersheds where public regional detention facilities exist, mitigation of increased storm water runoff from new construction may utilize these facilities if the new construction is eligible to participate in the RSWMP. Temporary detention may be required for the development until sufficient capacity in the outfall channel is provided to accommodate increased flows. Maintenance of publicly owned facilities will be the responsibility of the City. Maintenance of private facilities is the responsibility of the property owner or the community association and must be specified in the maintenance schedule submitted to the City. A maintenance schedule for both publicly owned and privately owned facilities must be approved by the Director of Public Works prior to approval of construction drawings.
- B. Drainage easements will be provided for all regional detention facilities. The easement will encompass the 100-year pool elevation plus all structural improvements (levees, dykes, berms, outfall structures etc.) necessary to contain the pool. The easement will extend, at a minimum, to the toe of the downstream embankment. Maintenance access (15' minimum) will be provided around the facility, outside the limits of the 100-year pool elevation. Ramps, as necessary, with a maximum slope of 7:1 will be provided for access to the flowline of the facility.

(4) Multi-Use Facilities

Multi-use facilities are encouraged, but not required (Multi-use facilities allows for water quality, satisfy NPDES requirements, enhance around water recharge, provide open space, provide recreation or other amenities, and/or provide habitat) and may be utilized so long as the facility meets the standards set forth in subsection (a) of this Section and does not increase the rate or volume of erosion above that which would result from the use of a facility without multiple uses. The use of multi-use detention facilities to alleviate existing flooding problems, enhance and provide amenities for older neighborhoods, and support the revitalization of economically depressed areas is encouraged in public and private redevelopment initiatives.

(5) Permanent Wet Pool Or Pumped Detention Systems

Stormwater retention with permanent wet pool or pumped detention systems will not be acceptable methods of stormwater mitigation unless the facility will remain privately owned,

operated, and maintained. The City will approve the use of a pumped facility for private use under the following conditions:

- A. A gravity system is not feasible from an engineering and economic standpoint.
- B. At least two (2) pumps are provided each of which is sized to pump the design flow rate;
- C. The selected design outflow rate must not aggravate downstream flooding.
- D. Controls and pumps shall be designed to prevent unauthorized operation and vandalism.
- E. Adequate assurance is provided that the system will be operated and maintained on a continuous basis.

(6) Location of Detention Facilities and Surrounding Development

Stormwater detention facilities shall be located in topographically depressed areas where possible. When necessary, dams may be constructed to detain flows. All proposed dams shall conform to the following items:

- A. All dams over six (6) feet above existing natural around shall be approved by the Dam Safety Team of the TNRCC for safety. All other new dams shall be designed in accordance with acceptable design criteria as approved by the Director of Public Works, or his authorized representative.
- B. All hydrology and hydraulic properties of a dam will be reviewed by the department of public works with regard to spillway design, freeboard hydraulics, backwater curves and downstream effects due to the dam site.
- C. The spillway section of any earthen dam with a height greater than six (6) feet shall be large enough to pass a PMP (probable maximum precipitation) flood, as defined by the NRCS, without overtopping the crest of the dam in accordance with TNRCC regulations.
- D. A 100-year frequency flood shall be routed through the proposed dam and all land subject to flooding shall be dedicated as drainage easement or right-of-way. An unobstructed fifteen-foot access easement around the periphery of the flooded area shall be dedicated as drainage easement for facilities that require regular mowing or other ongoing maintenance, at the discretion of the Director of Public Works. An unobstructed fifteen (15) foot access right-of-way shall be established which connects the drainage easement adjacent to the dam structure to a road or alley.
- E. Development below existing dams will take into account the original design conditions of the existing dam. Dam breach analysis checks will be required, dependent upon location of development with respect to dam site.
- F. All spillway discharges shall be adequately routed to the centerline of the natural low below the dam site. The adequate routing of spillway discharges pertains to the hydraulic routing of the 100-year frequency flood for dedication

of drainage easement limits. Probable Maximum Precipitation (PMP) defined PMP on definition section flood routing or breaches will only be considered for safety considerations (that is, the placement of building and the setting of minimum floor slab elevations below the dams). Any proposed concrete dam structure need not have spillway capable of routing a PMP flood, however, it shall be shown to be structurally capable of withstanding any range of flood conditions with regard to possible failure due to sliding, overturning, and structural integrity, up to and including the PMP flood.

(Ord. No. 97568 § 2; Ord. No. 98697 § 6)

(g) Streets

(1) Generally

- A. Design of streets shall consider public safety and limit potential conflicts between stormwater conveyance, traffic, parking, pedestrian access, ADA requirements, and bicycle traffic.
- B. Streets draining a watershed greater than 100-acres must be designed for the 100-year frequency storm.
- C. Streets may be used for storm water drainage only if the calculated storm water flow does not exceed the flows outlined in Table 504-7 or the velocity does not exceed ten (10) feet per second.
- D. Where Streets are not capable of carrying storm waters, as outlined above, inlets or curb openings discharging to drainage channels or storm sewers shall be provided. Partial flow past the inlet will be allowed when the capacity of all downstream Street systems can accommodate the flow.
- E. Street width shall not be widened beyond the width as determined by the Street classification for drainage purposes.
- F. Stormwater conveyance on Streets shall be designed to account for the cumulative impact of peak flows and runoff volumes on the system as the stormwater progresses downgrade.
- G. Curb cuts for driveways on all Streets shall be designed for compatibility with the stormwater conveyance function of Streets.
- H. Potential flooding problems or conflicts at the connection points where new or modified drainage systems (including Streets, storm sewers, etc.) and the existing portions of the downstream Street system and stormwater conveyance system shall be identified and resolved either in the design of the new or modified drainage system or in modifications to the existing system.

- I. Dwelling Units located on the downhill side of a T-intersection with a Street or drainage channel discharging onto the intersection shall be sited so as to avoid obstruction of the drainage patterns.

(2) Primary and Secondary Arterial Streets

An arterial street is a street so designated on the current major thoroughfare plan. One lane in each direction on arterial streets shall remain passable with a flow depth not to exceed 0.30 feet during a 25-year storm event. The maximum depth of water in the street section must not exceed seven (7) inches (the height of a standard city curb).

(3) Local "B" and Collector Streets

A maximum flow depth to the top of curb on a standard local "B" and collector street section will be allowed during a 25-year storm event. A collector street is a street with a width of forty-four (44) feet or more and not shown as an arterial street on the current major thoroughfare plan.

(4) Local "A" Streets

Local "A" Streets shall be designed on a basis of a five (5) year frequency. A 25-year frequency storm must be contained within the street right-of-way.

(5) Alleys

Alleys shall be designed for five (5) year frequency within the limits of the alley pavement / curbs and twenty-five (25) year frequency within the right-of-way/easement to carry storm water.

(6) Traditional Street Design

Traditional street design shall conform to the storm frequency requirements of the standard street designs listed above as follows:

- A. Trails, Alleys and Lanes – Use Alley design criteria.
- B. Local Street or Avenue – Use Local (A) Street design criteria.
- C. Main Street– Use Local (A), Local (B) or Collector Street design criteria depending on the pavement widths. Use Local (A) criteria where pavement width is less than 34'.
- D. Boulevard or Parkway – Use Arterial Street design criteria.

No flow capacity Tables are provided for the Traditional Street Designs due the variety of geometric properties associated with these streets. Drainage calculations specific to a proposed Traditional Street Design must be submitted for approval with every project where a Traditional Street Design is proposed.

(7) All-Weather Crossings

- A. Where Streets cross existing or proposed watercourses, all weather crossings shall be required. Culverts or bridges shall be adequate to allow passage of the design storm identified in Section 35-504(b)(1)
- B. All crossings, culverts and bridges shall be designed for an H-20-44 or HS-20 loading.
- C. Dangerous conditions for existing crossings are defined by Figure 504-2 (Dangerous Conditions on Crossing During Floods).

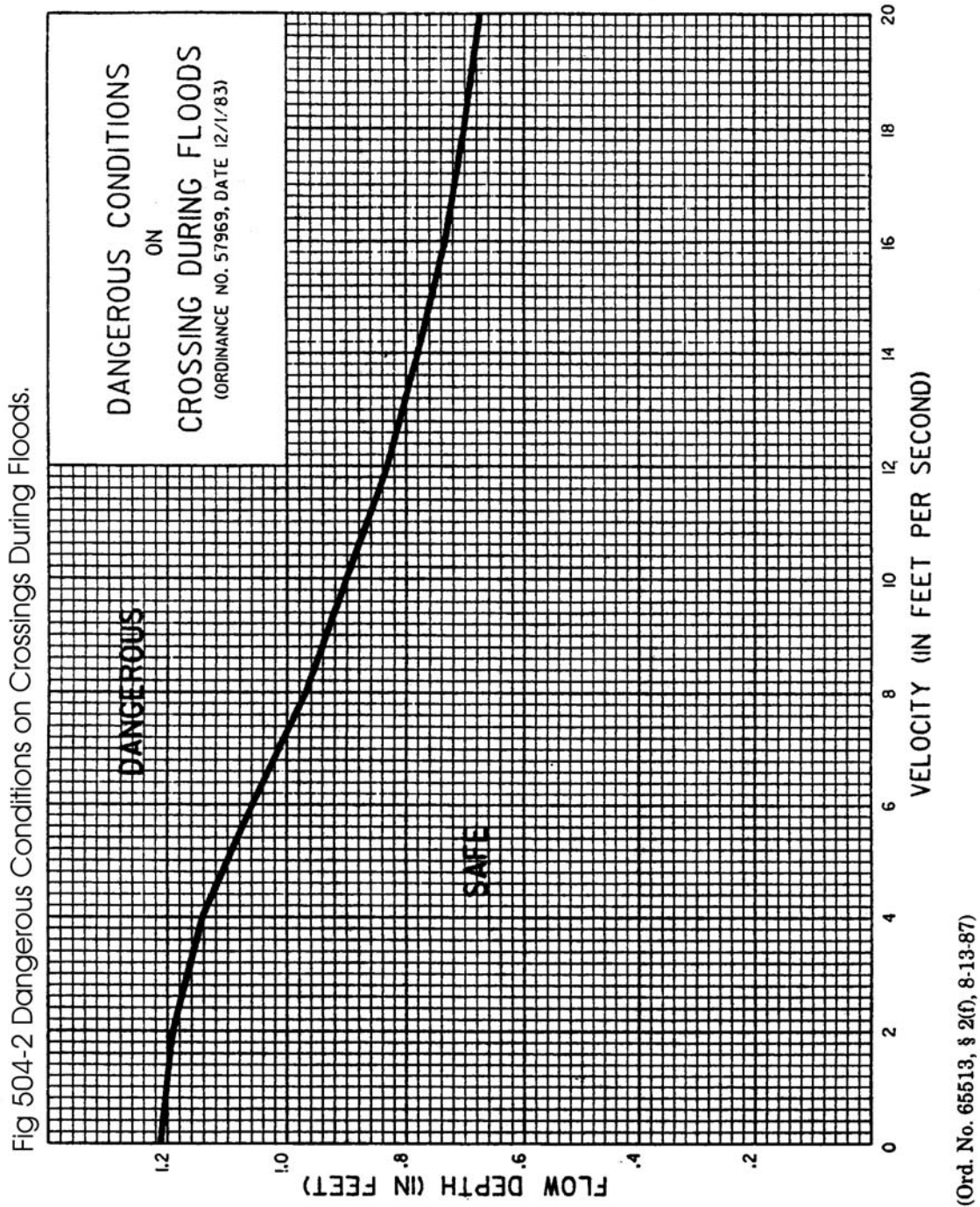
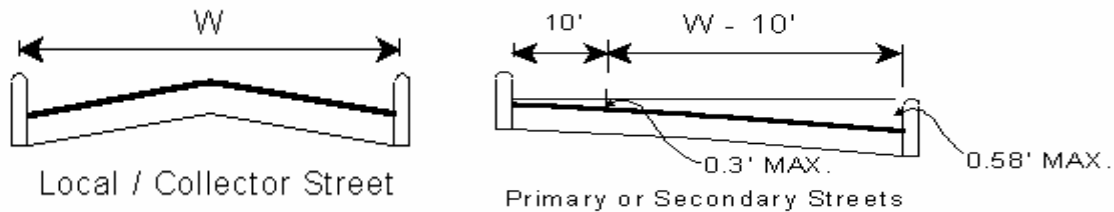


Figure 504-2

Table 504-7

Storm Drainage, Street Velocities & Capacities, Manning's N=0.018

**STORM DRAINAGE
STREET VELOCITIES AND CAPACITIES
Manning's n=0.018**

Slope %	LOCAL TYPE "A" W= 30'		LOCAL TYPE "B" W=40'		COLLECTOR W=44'		SECONDARY (W/MEDIAN) Maximum Water Depth = 7" W=24' Min. and 29' Max.		PRIMARY & Secondary (W/O MEDIAN) Maximum Water Depth = 7" W=24' Min. and 29' Max.	
	Q cfs	V f/s	Q cfs	V f/s	Q cfs	V f/s	Q cfs	V f/s	Q cfs	V f/s
0.40	35.4	2.8	47.8	2.9	44.1	2.7	20.6	2.5	19.2	2.3
0.45	37.5	3.0	50.7	3.0	46.8	2.8	21.9	2.7	20.4	2.4
0.50	39.6	3.2	53.4	3.2	49.3	3.0	23.1	2.8	21.5	2.5
0.55	41.5	3.3	56.0	3.4	51.7	3.1	24.2	2.9	22.5	2.7
0.60	43.3	3.5	58.5	3.5	54.0	3.3	25.3	3.1	23.6	2.8
0.65	45.1	3.6	60.9	3.7	56.2	3.4	26.3	3.2	24.5	2.9
0.70	46.8	3.8	63.2	3.8	58.4	3.5	27.3	3.3	25.4	3.0
0.75	48.5	3.9	65.4	3.9	60.4	3.7	28.3	3.4	26.3	3.1
0.80	50.0	4.0	67.6	4.1	62.4	3.8	29.2	3.5	27.2	3.2
0.85	51.6	4.1	69.6	4.2	64.3	3.9	30.1	3.7	28.0	3.3
0.90	53.1	4.3	71.7	4.3	66.2	4.0	30.9	3.8	28.8	3.4
0.95	54.5	4.4	73.6	4.4	68.0	4.1	31.8	3.9	29.6	3.5
1.00	55.9	4.5	75.5	4.5	69.8	4.2	32.6	4.0	30.4	3.6
1.50	68.5	5.5	92.5	5.5	85.4	5.2	40.0	4.9	37.2	4.4
2.00	79.1	6.4	106.8	6.4	98.6	6.0	46.1	5.6	43.0	5.1
2.50	88.5	7.1	119.4	7.2	110.3	6.7	51.6	6.3	48.1	5.7
3.00	96.9	7.8	130.8	7.8	120.8	7.3	56.5	6.9	52.7	6.2
3.50	104.7	8.4	141.3	8.5	130.5	7.9	61.0	7.4	56.9	6.7
4.00	111.9	9.0	151.1	9.1	139.5	8.5	65.2	7.9	60.8	7.2
4.50	118.7	9.5	160.2	9.6	148.0	9.0	69.2	8.4	64.5	7.6
5.00	125.1	10.0	168.9	10.0	156.0	9.5	72.9	8.9	68.0	8.0
5.50	116.0	10.0	153.0	10.0	163.6	9.9	76.5	9.3	71.3	8.4
6.00	108.0	10.0	143.0	10.0	157.0	10.0	79.9	9.7	74.5	8.8
6.50	102.0	10.0	134.0	10.0	148.0	10.0	81.0	10.0	77.5	9.1
7.00	96.0	10.0	127.0	10.0	140.0	10.0	76.0	10.0	80.4	9.5
7.50	91.0	10.0	120.0	10.0	132.0	10.0				

Slope %	LOCAL TYPE "A" W= 30'		LOCAL TYPE "B" W=40'		COLLECTOR W=44'		SECONDARY (W/MEDIAN) Maximum Water Depth = 7" W=24' Min. and 29' Max.		PRIMARY & Secondary (W/O MEDIAN) Maximum Water Depth = 7" W=24' Min. and 29' Max.	
	Q cfs	V f/s	Q cfs	V f/s	Q cfs	V f/s	Q cfs	V f/s	Q cfs	V f/s
8.00	87.0	10.0	115.0	10.0	126.0	10.0				
8.50	83.0	10.0	110.0	10.0	120.0	10.0				
9.00	79.0	10.0	105.0	10.0	115.0	10.0				
9.5	76.0	10.0	101.0	10.0	111.0	10.0				
10	73.0	10.0	97.0	10.0	106.0	10.0				

W = Width of ponded water.

(Ord. No. 97568 § 2)

(h) Drainage channels and watercourses.

This section addresses proposed improvements or modifications to drainage channels and watercourses required to convey stormwater runoff from or through the proposed development. Refer to Section 35-504 (b)(1) for storm frequency design criteria.

(1) Watercourses to remain unobstructed

Except as authorized by a development plan approved by the Director of Public Works or his designee, no person shall place or cause to be placed any obstruction of any kind in any watercourse within the City and its ETJ. The owner of any property within the City, through which any watercourse may pass, shall keep the watercourse free from any obstruction not authorized by a development plan.

(2) Channel modifications

- A. Modifications to existing watercourses or newly created open channels may be designed as earth channels, sod channels or as concrete lined channels. Liners other than sod or concrete which enhance the aesthetics or habitat value of the watercourse and which reduce future maintenance requirements are encouraged. Preliminary planning for the applicability of other channel liners shall be reviewed with the Director of Public Works or his representative prior to the submittal of construction plans for approval.
- B. Natural Unimproved Waterways. Runoff that results from upstream development and is discharged to an unimproved waterway can cause flood damage to properties adjacent to the waterway. Natural undeveloped waterways do not receive regular maintenance. Design of natural waterways shall take into consideration fluvial geomorphologic principals and practices. Consulting Engineers and Development Review officials shall work to resolve potential downstream impact issues.

(3) Maintenance

Design of new channels or alterations to existing channels shall consider future maintenance requirements. A maintenance schedule for any private channel shall be submitted to and approved by the Director of Public Works prior to approval of construction plans. Maintenance requirements of concrete channels consist of de-silting activities, prevention of vegetation establishment in construction joints, and repair of concrete as necessary. Maintenance of earthen channels includes regular observation and repair as necessary of erosion, scouring, and removal of silt deposits, as necessary to maintain design parameters. Developers shall be responsible for maintaining newly planted channels until coverage is established throughout 85 percent of the area. This area shall include slopes, floor, and any attendant maintenance easement. New earthen channels shall be planted with drought resistant, low growth, native species grasses, which will allow unobstructed passage of floodwaters. Johnson Grass, Giant Ragweed and other invasive species shall not be allowed to promulgate in channels. Suggested species shall include, but not be limited to, Common Bermuda, Coastal Bermuda, Buffalo Grass, Sideoats Grama, Seep Muhly, Little Bluestem, and Indian Grass. Mowing frequencies vary with the vegetation growth rates, but is required when the grass exceeds the design roughness coefficient of the channel.

(4) Multiple Uses

Planned multiple-use of a watercourse is allowed (e.g. bike paths or greenbelt). If multiple use of the watercourse is to be incorporated, the Applicant shall form a property owners association that shall assume maintenance responsibility for private amenities. The appropriate government agency will be responsible for maintenance of public amenities. The Applicant shall provide overlay easements for public or private use.

(5) Velocity Criteria

Table 504-8 shall be used to determine maximum permissible channel velocity.

Table 504-8 Velocity Control

Velocity (fps)	Type of Facility Required	Hydraulic Radius (ft.)	Correction Factor	Maximum Permissible Velocity (fps)
1 to 6 (Maximum Average Velocity = 6 fps)	Vegetated Earthen Channel	0-1	0.8	5
		1-3	0.9	5.5
		3-5	1.05	6.3
		5-8	1.15	6.9
		8-10	1.225	7.35
		Over 10	1.25	7.5
6 to 8	Concrete Retards	NA	NA	NA
> 8	Concrete Lining or Drop Structures	NA	NA	NA

- A. Where velocities are in the supercritical range, allowance shall be made in the design for the proper handling of the water.

- B. Ensure that the channel will contain the hydraulic jump (sequent depth) throughout the extent of the supercritical profile. An exception to this criteria is where concrete lined lateral channels discharge down the side slopes of channels. These channels may be designed for normal depth plus freeboard provided velocity controls are established at the main channel flowline.
- C. Ensure that the energy grade of the channel will not result in upstream flooding at existing or proposed lateral facility connections.

(6) Retard Spacing

Retard spacing shall be computed as follows when using the City standard retard section Figure 504-3 and the following equations:

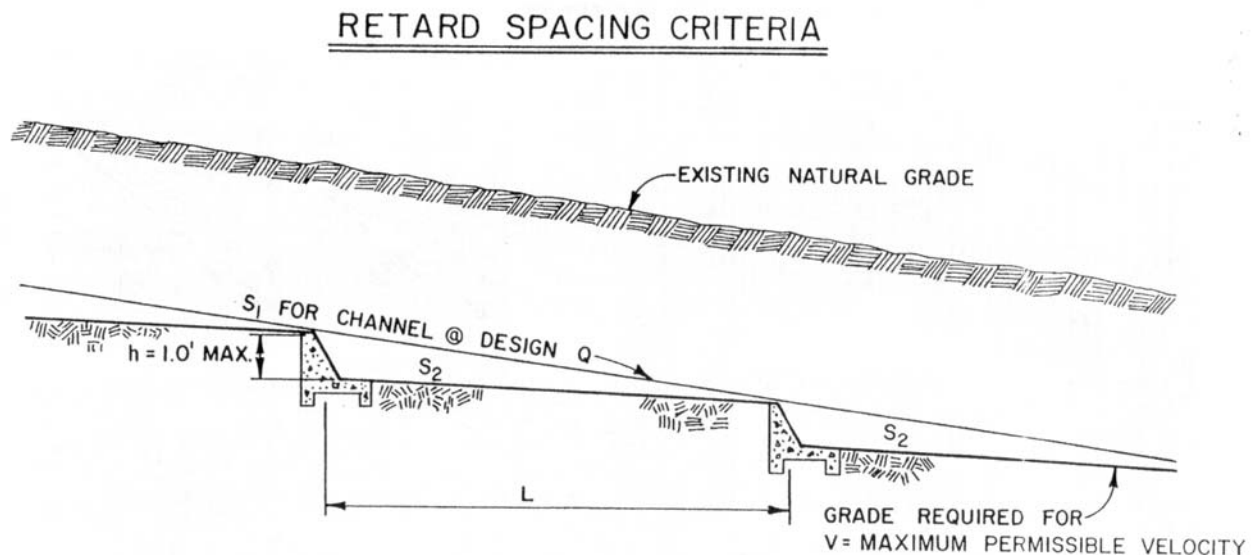


Figure 504-3

$$L = 1.0' \div (S1 - S2)$$

Where:

- L = Distance required between retards in feet.
- S1 = Actual slope of channel in ft./ft.
- S2 = Slope of proposed channel for maximum permissible velocity established from Table 504-8, i.e.:

And

$$S2 = [(NV)^{\frac{1}{3}} (1.486R^{2/3})]^2$$

Where: V = maximum permissible velocity established from Table 504-8

N = .035

R = area/wetted perimeter

(7) Concrete lined channels.

The design of concrete lined channels shall comply with the following general requirements:

- A. Freeboard consistent with Table 504-9 will be applied to the 25-year design.
- B. From the top of the concrete lining to the top of the ditch, a side slope not steeper than three (3) horizontal to one (1) vertical shall be required; nor shall the slope be less than twelve (12) to one (1).
- C. For normal conditions, the concrete lining shall be a minimum of five (5) inches thick and reinforced with No. 3 round bars @ 12 inches on center each way. Where surcharge, nature of ground, height and steepness of slope, etc. become critical, design shall be in accordance with latest structural standards. All concrete lining shall develop a minimum compressive strength of not less than three thousand (3,000) pounds per square inch in twenty-eight (28) days. The depth of all toe downs shall be 36 inches upstream, 24 inches downstream, and 18 inches for side slopes. The City's Construction Inspector may permit an 18" toe down in rock subgrade in lieu of the above toe down requirements. The horizontal dimensions of toe downs shall not be less than six (6) inches.
- D. Maximum concrete riprap side slopes shall be one and one-half horizontal to one vertical, unless soils tests made by a geotechnical engineer shows that a greater slope, or a special design, will be stable. Where vehicular traffic may travel within a horizontal distance equal to one-half the vertical rise of the slope, a two-foot surcharge load shall be included in the design.
- E. Fencing will be required adjacent to the channel where channel vertical wall heights exceed 2 feet. Fencing will also be required adjacent to the channel where channel side slopes exceed 2:1 and the channel depth is greater than 2 feet. The fencing must not cause sight distance problems for motorists.
- F. Vertical walls will not be permissible for depths greater than two (2) feet unless properly fenced or enclosed. Walls will have a minimum thickness of six (6) inches.
- G. Easements or rights-of-way for concrete lined channels shall extend a minimum of two (2) feet on both sides of the extreme limits of the channel.
- H.

"Extreme limits" of the channel shall mean the side slope intercept with the natural ground or proposed finished ground elevation.

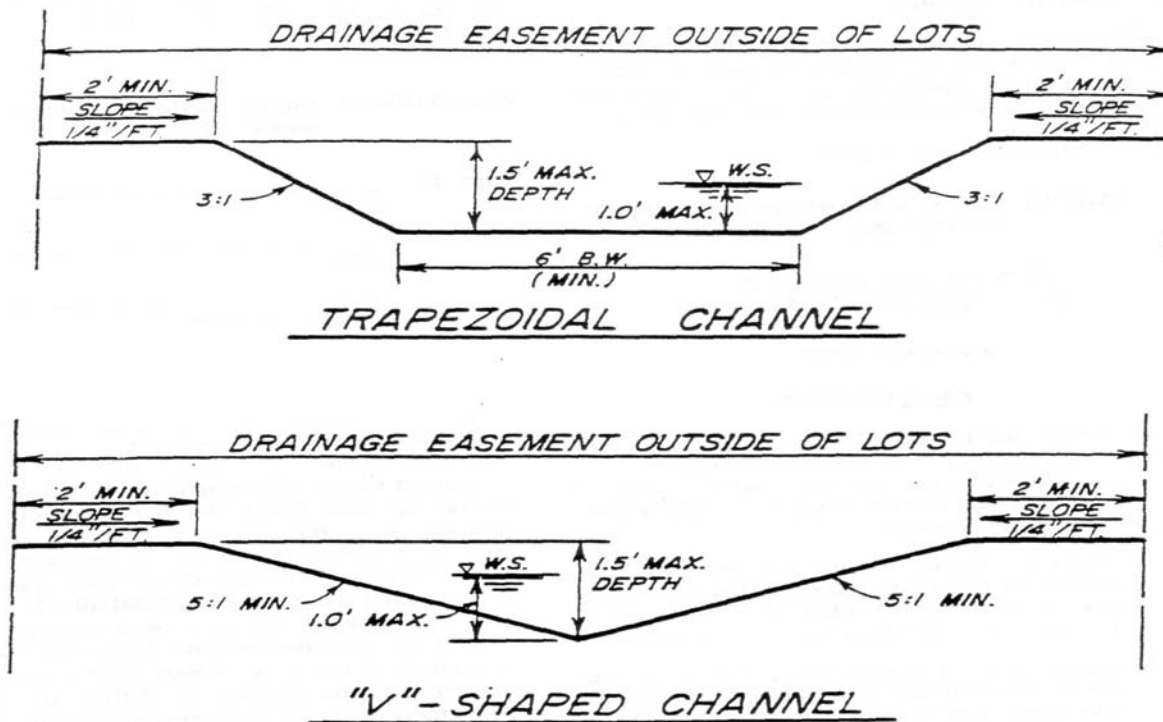
- I. A minimum N value of roughness coefficient of 0.015 shall be used for a wood float type surface finish. This N value is as used in Manning's formula.

Table 504-9
Drainage Freeboard for Concrete
Lined and Earth Channels for (25) year storm

Design Depth of Flow	Required Freeboard
0 to feet 5 feet	0.5 foot
5 to 10 feet	10% of design depth
10 feet and over	1.0 foot

(8) Vegetated Earth channels

- A. Freeboard consistent with Table 504-9 will be applied to the 25-year design.
- B. The side slope shall not be steeper than three (3) horizontal to one (1) vertical.
- C. Easements or rights-of-way for improved earth channels shall conform to the requirements stated in subsection (d) of this Section and shall extend a minimum of two (2) feet on one side and fifteen (15) feet for an access road on the opposite side of the extreme limits of the channels when such channels do not parallel and adjoin an alley or roadway. When such channels do parallel and adjoin an alley or roadway, the easement or right-of-way shall extend a minimum of two (2) feet on both sides of the extreme limits of the channel. Where utilities are installed in the access road of the drainage right-of-way, the right-of-way shall extend two (2) feet on one (1) side and seventeen (17) feet on the opposite side of the design limits of the channel. These seventeen (17) feet are to provide an access way along the channel with a maximum cross slope of one (1) inch per foot toward the channel. Where designed channel bottoms exceed one hundred (100) feet in width, the fifteen-foot extra width shall be provided on both sides of the channel.
- D. Interceptor drainage easements shall extend a minimum of two (2) feet on both sides of the extreme limits of the channel. Refer to Figure 504-4.
- E. Improved earthen channels will be vegetated by seeding or sodding. Eighty five percent of the channel surface area must have established vegetation before the City of San Antonio will accept the channel for maintenance.



NO RETARDS
VEL. CONTROL

**STANDARDS FOR
INTERCEPTOR DRAINS
FOR INTERCEPTING SHEET FLOW
(WITHOUT ACCESS EASEMENT REQ'D)**

(Ord. No. 86711, § 22, 9-25-97)

Figure 504-4

(9) Channel bends and turns - Freeboard.

Allowance for extra freeboard shall be made when the center line radius of the channel is less than three (3) times the bottom width. Where sharp bends or high velocities are involved, the applicant shall use the following formula for computing the extra freeboard:

$$d_2 - d_1 = V^2(T + B) \div 2gR$$

Where: d_1 = depth of flow at the inside of the bend in feet.

- d_2 = depth of flow at the outside of the bend in feet.
B = bottom width of the channel in feet.
V = the average approach velocity in the channel in feet per second.
T = width of flow at the water surface in feet.
g = 32.2 feet/second squared.
R = the center line radius of the turn or bend in feet.

- A. The quantity $d_2 - d_1$ divided by 2 shall be added to the normal depth of flow before adding the required freeboard in calculating required right-of-way widths.
- B. Where sharp turns are used without curved sections, the depth required shall be large enough to provide for all head losses. Allowance shall be made for any backwater head that may result.
- C. For normal design conditions no extra freeboard is required. An accepted rule of thumb to follow is this: Centerline radius of channel should be at least three (3) times the bottom width.

(Ord. No. 97568 § 2; Ord. No. 98697 § 6)

(i) Storm Sewers

- (1) For all ordinary conditions, storm sewers shall be designed on the assumption that they will flow full under the design discharge; however, whenever the system is placed under a pressure head, or there are constrictions, turns, submerged or inadequate outfall, etc., the hydraulic and energy grade lines shall be computed and plotted in profile. In all cases adequate outfalls shall be provided and the system adequately designed.
- (2) No storm sewers shall be less than twenty-four (24) inches in diameter.
- (3) Minimum easement widths for storm sewers will be the greater of 15' or six-feet on both sides of the extreme limits of the storm sewer width (e.g. the easement width for a three barrel 10' wide box culvert with 6" walls would be $(3 \times 10') + (4 \times 0.5') + (2 \times 6') = 44'$).

(Ord. No. 97568 § 2)

(j) Inlets and Openings**(1) Drop curb openings – sidewalk does not abut opening.**

Where drop curb openings are used to take storm water off the Streets and into drains, the length of the curb opening can be calculated from the weir formula using the coefficient of 3.087 in the following formula:

$$L = Q \div Ch^{3/2}$$

Where:

L	= the length of drop curb opening required in feet.
Q	= amount of flow in CFS based on 25-year design frequency.
C	= 3.087.
h	= head of weir in feet.

Gutter line depressions will be permitted where such depressions will not hamper the flow of traffic. For amount of curb exposure, conform to City of San Antonio Inlet Standards.

(2) Curb or Drop inlets.

Where drop inlets are use, the City standard inlets with adequate reinforcing steel may be used. All other types or designs shall be subject to the approval of the Director of Developments Services in consultation with the Director Public Works. The following formulas for inlet capacity are based on drop inlets in sag points. Inlet capacities on grades will be considered less, the amount of which depends on Street grades, deflections, cross slopes, depressions, etc.

(3) Grate inlets.

The flow of water through grate openings may be treated as the flow of water through a rectangular orifice. The following formula may be used for determining grate capacity:

$$Q = CA (2gh)^{1/2}$$

Where:

Q	= discharge in cubic feet per second.
C	= orifice coefficient of discharge (taken as 0.70).
g	= acceleration due to gravity (32.2 ft./sec. ²)
h	= head on the grate in feet.
A	= net area of the openings in the grate in square feet.

This formula gives the theoretical capacity of the grate inlet. Since grate inlets are subject to considerable clogging, capacity of the grate inlet will be taken as one-half on the value given by this formula.

(4) Curb opening inlets.

The capacity of curb opening inlets will depend on whether or not the opening is running partially full or submerged. If the depth of flow at the curb opening inlet is such as to cause a partially full opening, a weir effect will develop and the following formula will apply:

$$Q = C_w L(h)^{3/2}$$

Where: Q = the discharge of capacity in cubic feet per second.

C_w = the weir coefficient of discharge (3.087).

L = the length of curb opening in feet.

h = the head or depth of water at the opening in feet.

If the depth of flow at the curb opening is such as to fully submerge the opening, the orifice effect will develop and the formula used shall be identical to that given under grate inlets with the exception that the head, h, on the curb opening orifice shall be taken as the depth from the top of the water surface to the center of orifice or opening; one hundred (100) percent efficiency will be allowed for curb opening inlets.

(Ord. No. 98697 § 1 & 6)

35-505 Floodplains (Moved to Appendix F)**35-506 Transportation and Street Design**

The purpose of this Section is to prescribe minimum design standards for Streets within new subdivisions, developments requiring site plan approval, and for developments requiring a zoning permit. Unlike the situation in traditional subdivision regulations, one intent of this Section is to permit narrower Street widths while requiring greater connectivity in order to more efficiently disperse traffic, protect pedestrians from high vehicular speeds, and to enhance the Streetscape. For Conventional Subdivisions, Commercial Centers, and Applications for Development Approval within conventional zoning district, the existing Street widths and design standards are retained in order to accommodate the heavier traffic levels and greater reliance on vehicular travel.

This Section implements the following provisions of the Master Plan:

- *Urban Design, Policy 1b: Create and adopt urban design guidelines and standards which specifically encourage pedestrian safety and comfort, transit access, Street level amenities, and circulation between neighborhood centers.*
- *Urban Design, Policy 1b: Provide design standards for Streetscape improvements including appropriate landscaping, furnishings, signage/graphics and pedestrian paths, along with gateways, landmarks, and markers at strategic access/transition points.*
- *Urban Design, Policy 1c: Encourage Street patterns that promote pedestrian connections and multiple connection points and do not contribute to collector Street congestion.*

35-506 continued

- *Urban Design, Policy 1g: Prepare design and construction policies and standards for utility and transportation infrastructure, capital improvement projects, public facilities and development projects that reinforce neighborhood centers and provide diverse, pedestrian-friendly neighborhoods.*
- *Urban Design, Policy 4c: Create Streetscapes which emphasize both pedestrians and vehicles.*
- *Urban Design, Policy 4c: Encourage the design and use of rear alleys in residential neighborhoods to reduce "points of conflict" between automobile and pedestrian traffic.*
- *Urban Design, Policy 4c: Increase minimum standards for pedestrian infrastructure including sidewalk width, location and lighting. Establish an administrative variance procedure to provide relief from sidewalk requirements where appropriate.*
- *Urban Design, Policy 4c: During the construction of all major thoroughfares and the reconstruction of existing major thoroughfares, install medians unless not feasible.*
- *Urban Design, Policy 4c: Minimize the use of continuous turn lanes when feasible.*
- *Urban Design, Policy 5a: Provide roadway improvements that facilitate delivery of emergency, police and fire services.*
- *Urban Design, Policy 5b: Evaluate and revise traffic engineering standards, as appropriate, to provide for traffic circles, local and collector offset Street intersections, parallel and head in parking and bike lanes.*
- *Urban Design, Policy 5f: Consider the use of alternative surface materials to increase durability.*
- *Urban Design, Policy 5f: Work with the County to establish design requirements for Streets and road construction so that Streets have a lifetime expectancy of at least 20 years.*
- *Urban Design, Policy 5i: Develop a safe and convenient pedestrian travel network with sidewalks, walkways and trails integrated into the transportation system and neighborhood centers.*
- *Urban Design, Policy 5i: Ensure that all new sidewalks comply with City codes, and are designed to be functional and unobstructed, linking neighborhoods, residential areas and neighborhood centers together.*
- *Urban Design, Policy 5i: Provide incentives for developers to exceed minimum standards for the pedestrian infrastructure.*
- *Urban Design, Policy 5i: Promote safety on the pedestrian networks by eliminating physical barriers for the movement impaired maximizing visual contact between the network and surrounding areas modifying zoning to promote high activity uses adjacent to the network providing buffers from vehicular traffic, and enhancing signage for pedestrians*
- *Urban Design, Policy 5j: urban design as an integral part of all new construction and improvement of transit centers, Streets, and pathways in the City.*
- *Urban Design, Policy 5k: Accommodate the specific needs of disabled individuals in all transportation modes.*
- *Urban Design, Policy 5h: Consider bicycling in the design and construction of public Streets.*

The City further finds and determines that Street layout and design can have a very significant influence on the total imperviousness and hydrology of a site. Alternative road layout can

result in a significant reductions in imperviousness, thereby reducing stormwater runoff, protecting water quality, and providing cost savings for developers and homebuyers.

(a) Applicability

(1) Generally

The provisions of this Division shall apply to:

- A. Any application for subdivision plat approval.
- B. Any application for Master Development Plan approval if no subdivision plat is required.
- C. Any ministerial permit where required by subsection (b), below.

(2) Building permit requirements.

The construction of standard curbs and sidewalks shall be a condition of the granting of a building permit in each of the following cases:

- A. A new building or structure when curbing is in place or curb lines are established for a sidewalk.
- B. The repair or improvement of an existing building or structure when curbing is in place or curb lines are established and the cost of the repair or improvement amounts to twenty-five (25) percent or more of the assessed evaluation of the building/structure as set forth by the City tax roll for the entire lot.
- C. A new or an additional driveway approach.
- D. Refer to section (q) for sidewalk standards.

In addition to the above requirement, premises used as motor vehicle service stations or parking lots require the construction of a minimum six (6) inch raised curb or other approved traffic barrier, within the lot, along the entire Street frontage except at approved driveway approaches and access walks to prevent vehicular access to the street except at designated driveway(s).

(Ord. No. 97568 § 2; Ord. No. 98697 § 6)

(b) Improvements Required

All street grading and base construction shall be in accordance with approved plans. Streets shall be completed consistent with the approved construction plans.

35-506 continued

(c) Classification**(1) Conventional Classification System**

Classification of an existing or proposed Street not already identified on the Major Thoroughfare Plan, for the purpose of determining the appropriate design of a roadway or development, or for the purpose of determining the appropriateness of a location for a proposed use, shall be done by the Director of Development Services in consultation with the Director of Public Works. Pursuant to the Major Thoroughfare Plan, the following classification system is hereby adopted:

**Table 506-1
Functional Classification System Description**

Functional Class	Level of Mobility	System Access	Level of Accessibility
Freeway	Connects all urban sub regions together, connects urban and rural service areas with metro major activity centers; connection to outside cities.	To other freeways, principal arterial, and selected arterial; no direct land access.	Long trips at high speed within and through the metro area; express transit trips.
Primary Arterial	Connects two or more sub regions; provides secondary connections outside cities; complements freeway in high volume corridors.	To freeways, other principal arterial, and high volume collectors; no direct land access except major traffic generators.	Medium distance to long trips at high to moderate speeds within the urban area; express transit trips.
Secondary Arterial	Connects adjacent sub regions and activity centers within sub regions.	To freeways, principal arterial, other arterial, and collectors; restricted direct land access.	Medium to short trips at moderate to low speeds; local transit trips.
Collector	Connects neighborhoods within and between sub regions.	To arterial, other collectors, and local Streets; direct land access.	Primarily serves collection and distribution function for the arterial system at low speeds; local transit trips.
Local (includes Conservation Access, Local Type A, Local Type B.)	Connects blocks within neighborhoods and specific activities within homogeneous land use areas.	To collectors and other local Streets; direct land access.	Almost exclusively collection and distribution; short trips at low speeds.

35-506(c) continued

(2) Traditional Design Classification

The following classification system shall be used for designing a Traditional Neighborhood Development (TND) pursuant to § 35-207 of this Chapter:

**Table 506-2
Functional Classification System Description**

Functional Class	Level of Mobility	System Access	Level of Accessibility
Parkways	Parkways bring people into a neighborhood, or pass traffic through natural areas. Parkways are not designed for development. When the parkway enters the new neighborhood, it becomes a boulevard.	To parkways, boulevards, and to freeways, principal arterial, and selected arterial; no direct land access.	Long trips at moderately high speeds within and through the metro area; express transit trips.
Boulevard	Provides multi-lane access to commercial and mixed-use buildings, and carries regional traffic.	To freeways, other principal arterial, and high volume collectors; no direct land access except major traffic generators.	Medium distance to long trips at high to moderate speeds within the urban area; express transit trips.
Main Street	Provides access to, and a space for, neighborhood commercial and mixed-use buildings.	To local Streets, lanes, and other avenues or main Streets.	Medium to short trips at moderate to low speeds; local transit trips.
Avenue	Connects centers and neighborhoods. Avenues go from neighborhoods to centers, and are not long (no more than one mile). Avenues may circulate around a square or neighborhood park.	To local Streets, lanes, and other avenues or main Streets.	Primarily serves collection and distribution function for the transportation system at low speeds; local transit trips.
Local	Provides access to housing	To local Streets, alleys, and avenues or main Streets	Almost exclusively collection and distribution; short trips at low speeds.
Lanes	Provides access to single-family homes.	To local Streets, alleys, and avenues or main Streets	Almost exclusively collection and distribution; short trips at low speeds.
Alleys	Provides access to rear of property.	To local lanes and local Streets	No direct frontage. Access is from the rear of lots.
Trails	Provides non-motorized access throughout a neighborhood.	Connects homes, parks and schools, and shopping districts	No vehicular access.

Source: adapted from Local Government Commission, Street Design Guidelines for Healthy Neighborhoods (Jan. 1999)

(3) Classification Factors

In determining the classification of a Street, factors to be considered include the following existing or proposed features:

- A. Facility Geometrics, including the number and width of traffic lanes, turning lanes, and parking lanes.
- B. Access Conditions, including any restrictions on access, the spacing of private accesses, and average lot frontages.
- C. Traffic Characteristics, including ADT, percentage of trucks, average operating speed, percentage of turning movements, origin-destination characteristics of the traffic, and peak hour characteristics of traffic.
- D. Adjacent Land Uses.

(Ord. No. 97568 § 2; Ord. No. 98697 § 1)

(d) Cross-Section and Construction Standards

(1) Interior Streets

The subdivider shall dedicate all interior Streets within the subdivision based upon the following tables:

35-506(d) continued

Table 506-3
Conventional Street Design Standards

Street Type	Marginal Access	Alley	Access to Conservation Subdivision	Local Type A	Local Type B	Collector	Secondary Arterial ¹	Primary Arterial ²
ROW (min.) ⁸	36'	24'	36' 34'	50'	60'	70'	86'	120'
Pavement Width ⁸	26'	18-24'	24' ⁷	28'	40'	44'	48'	72-48'
Grade (max.) ³	12%	12%	12%	12%	12%	7%	5%	5%
Grade (min.) ⁴	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
"K" Crest Curve	30	NR	30	30	30	55	70	70
"K" Sag Curve	35	NR	35	35	35	55	60	60
Centerline Radius (min.)	100'	50'	100'	100'	100'	400'	700'	1,200'
Stopping Sight Distance	75'	75'	75'	110'	150'	200'	300'	300'
Curb	No	No	No	Yes	Yes	Yes	Yes	Yes
Median	NR	NR	NR	NR	NR	NR	14' min.	14' min.
Sidewalk Width (see subsection (g)(5))	NR	No	4'/6' One Side Only	4'	4'/6'	4'/6'	4'/6'	4'/6'
Bike Facilities ⁶	NR	NR	NR	Nr	NR	City Option ⁵	Yes Path ⁵	Yes Path ⁵
Streetscape Planting	NR	No	NR	NR	NR	Yes	Yes	Yes
Planting Strips	NR	NR	NR	NR	2' Min.	2' Min.	2' Min	2' Min.

Notes and Rules of Interpretation:

NR designates the item is « not required »

Table 506-3 is required for conventional option subdivisions (see § 35-202) or subdivisions not subject to Table 506-4, below), except for « Access to Conservation Subdivision », which apply only to Conservation Subdivisions (§ 35-203).

¹ For Secondary Arterial Type B right-of-ways designated on the Major Thoroughfare Plan, the required right-of-way will be a minimum of 70' with 86' at the intersections as determined by the Director of Development Services in consultation with the Director of Public Works.

² For Primary Arterial Type B right-of-ways designated on the Major Thoroughfare Plan, the required right-of-way will be a minimum of 70' with 120' at the intersections as determined by the Director of Development Services.

³ See Figure 506-2

⁴ 0.4% Optional with concrete curb and gutter.

⁵ Bike path and sidewalks can be combined. See section 35-506(4).

⁶ When designated on bicycle master plan as approved by City Council

⁷ Entry portion without parking.

⁸ Right-of-Way and pavement width requirements in established neighborhoods can be waived by the Director of Development Services in consultation with the Director of Public Works as required on Capital Improvement Projects.

8. Sidewalks along Local Type A streets shall be 4 foot in width and on a Local Type B street shall be 4 foot in width with a planting strip or 6 foot in width without a planting strip.

35-506(d) continued

(Ord. No. 96564 § 3; Ord. No. 97568 § 2; Ord. No. 98696 § 1; Ord. No. 98697 § 1)

Table 506-4
Traditional Street Design Standards

Street Type	Trail	Alley	Lane	Local	Avenue	Main Street	Boulevard	Parkway
ROW (min.)	14'	20'	38'	48'	82'	58'	124'	86'
Pavement Width ¹	8'-14'	10'-12'	16'-18'	22'- 27'	27'-48'	28'-36'	44'-70'	44'+
Grade (max.)	10%	10%	10%	10%	7%	7%	7%	5%
Grade (min.) ⁴	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
"K" Crest Curve	NR	NR	30	30	55	55	55	70
"K" Sag Curve	NR	NR	35	35	55	55	55	60
Curb Radius	N/A	15'	15'	15'	25'	15'	25'	25'
Centerline Radius ²	95'	50'	90'	90'	250'	600'	500'	1,000'
Stopping Sight Distance	75'	75'	110	110'	150'	N/A	300'	300'
Intersection Sight Distance	15'	15'	15'	25'	75'	N/A	150'	150'
Curb	No	No	Yes	Yes	Yes	Yes	Yes	No
Median	N/A	N/A	N/A	N/A	14' in.	N/A	14' min.	14' min.
Sidewalk Width (see subsection (q)(5))	N/A	No	4'/6'	4'/6'	4'/6'	4'/6'	4'/6'	4'/6'
Bike Facilities ³	N/A	N/A	No	No	Yes Path	City Option	Yes Path	Yes Path
Streetscape Planting	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Planting Strips	N/A	N/A	6'	6'	6'	City Option	6-11'	7-20'

Notes and Rules of Interpretation:

NR designates the item is « not required »

Table 506-4 applies only to the following development options: Commercial Center (§ 35-204), Commercial Retrofit (§ 35-206), Traditional Neighborhood Development (§ 35-207), and Transit-Oriented Development (§ 35-208), except as provided in footnote 5, below.

¹ See Table 506-4A below. The smaller street width with on-street parking prohibited, or the larger street width coupled with on-street parking on one or both sides of the street, may be provided if the adjoining buildings are provided with (1) an NFPA 13D fire sprinkler system for Single-Family Dwelling Units, One Family Attached Dwelling Units, Two-Family (Duplex) Dwelling Units, Two-Family Attached Dwelling Units; (2) an NFPA 13R fire sprinkler system for Multi Family buildings; or (3) an NFPA 13 fire sprinkler system for Commercial Building.

² Lesser radius can be approved by the Director of Development Services.

³ Bike path and sidewalks can be combined. See section 35-506(4).

⁴ Optional 0.4% with concrete curb and gutter.

⁵ Any provision in Table 506-3 (entitled "conventional street design standards") notwithstanding, interior streets in a subdivision that would otherwise be required to comply with the provisions of Table 506-3 may instead comply with the provisions of Table 506-4 (entitled "traditional street design standards"), regarding pavement width requirements only, provided that the connectivity ratio (see subsection (e), below and § 35-207(g) of this Chapter) shall comply with the requirements for a Traditional Neighborhood Development. The proposed development shall comply with footnote 1 hereto. Pursuant hereto, street types in such subdivisions shall comply with Table 506-4 as follows: An Alley shall be required to meet the street width standards for an Alley as provided in Table 506-4; a Conservation Access street shall be required to meet the street width standards for a Lane; a Local Type A street shall be required to meet the street width standards for a Street; a Local Type B street

shall be required to meet the street width standards for an Avenue; a Collector street shall be required to meet the street width standards for a Main Street; a Secondary Arterial shall be required to meet the street width standards for a Boulevard; and Primary Arterial shall be required to meet the street width standards for a Parkway.

(Ord. No. 96564 § 3; Ord. No. 97568 § 2; Ord. No. 98697 § 1)

Table 506-4A
Street Width options for Traditional Street Design Standards

<i>Street Type</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>
	<i>Street Width</i>	<i>Parking</i>	<i>Directional</i>	<i>Fire Sprinklers</i>	<i>Alleys</i>	<i>Max. Block</i>	<i>Connections</i>	<i>Turning Radius</i>
Lane	18'	None	1-Way	No	No	300'	27'	25-50'
Local	24'	1 Side	2-Way	No	Yes	-	NR	25-50'
Local	27'	Both Sides	2-Way	No	No	-	NR	25-50'
Lane	16'	None	1-Way	Yes	Yes	-	NR	25-50'
Lane	18'	None	2-Way	Yes	Yes	-	NR	25-50'
Lane	18'	1-Side	1-Way	Yes	Yes	-	NR	25-50'
Local	22'	None	2-Way	Yes	Yes	-	NR	25-50'
Local	22'	1-Side	2-Way	Yes	Yes	-	NR	25-50'
Local	25'	Both Sides	2-Way	Yes	Yes	-	NR	25-50'
Local	26'	Both Sides	2-Way	Yes	Yes	-	NR	25-50'

Rules of interpretation for Table 506-4A:

Column A (Street Width) refers to the width of the street from curb face to curb face.

Column B (Parking) indicates whether on-street parking is permitted, whether on both sides or only one side of the street.

Column C (Directional) refers to the directional flow of traffic.

Column D (Fire Sprinklers) refers to whether fire sprinklers are required. See footnote 1 of Table 506-4, above.

Column E (Alleys) indicates whether alleys are required. Alleys are permitted for any street classification.

Column F (Max. Block) refers to the maximum block length. Maximum block length is not subject to an administrative exception (see § 35-501(b) and 35-207(f) of this Chapter).

Column G (Connections) indicates the width of streets connecting to the street from intersection to intersection. The connecting street must be located at each end of the block. "NR" means that a connecting street of minimum width is not required.

Column H (Turning Radius) refers to the minimum inside and outside turning radii (see "Figure 506-1 Turning Radius Design," below).

(Ord. No. 97568 § 2)

35-506(d) continued

This diagram below provides the minimum turning radius for a pumper truck. The minimum inside radius is 25' and the minimum outside radius is 50'.

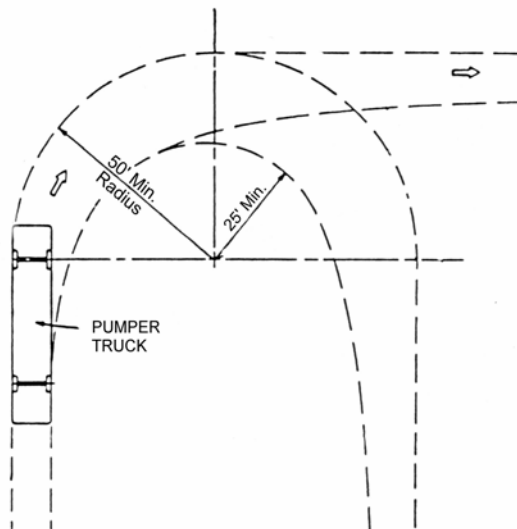


Figure 506-1

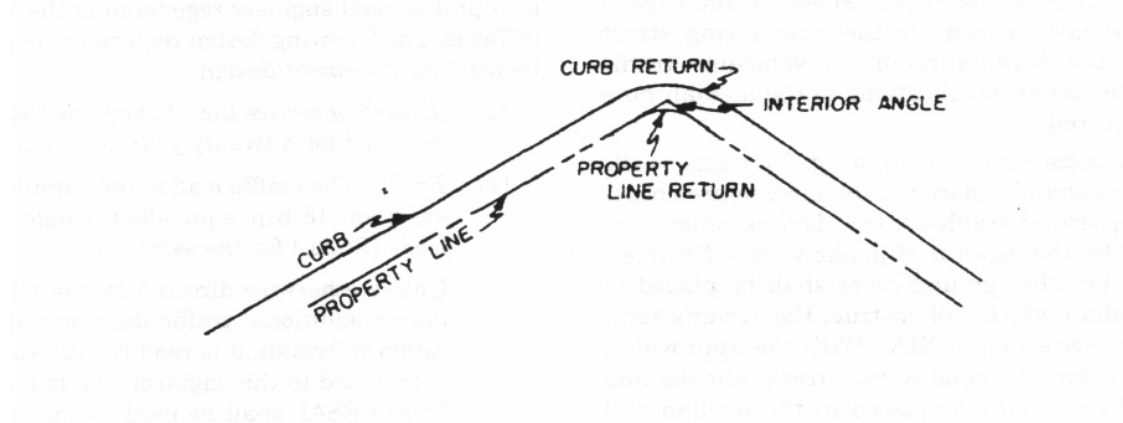
Turning Radius Design

35-506(d) continued

Table 506-4B
Curb Return and Property Line Table

Minimum radii for Curb (Corner) Returns (CR) and Property Line Returns (PLR)

Interior Angles in Degrees	Local "A" w/ Local "A"		Local "A" w/ Local "B"		Local "B" w/ Collector		Collector w/ Collector		Collector w/ Arterial		Arterial w/ Arterial	
	CR	PLR	CR	PLR	CR	PLR	CR	PLR	CR	PLR	CR	PLR
120-106	15'	5'	20'	10'	25'	15'	25'	15'	25'	15'	30'	15'
105-91	15'	5'	20'	10'	25'	15'	25'	15'	25'	15'	35'	20'
90	15'	5'	20'	10'	25'	15'	25'	15'	25'	15'	50'	35'
89-76	20'	10'	25'	15'	30'	20'	30'	20'	30'	20'	55'	40'
75-60	25'	15'	30'	20'	35'	25'	35'	25'	35'	25'	60'	45'



Notes:

- (1) Intersections with interior angles greater than 120 degrees or less than 60 degrees not permitted.
- (2) Property Line Return may be simple curve tangent to right-of-way lines or cut-off measured from PI of intersecting right-of-way lines.
- (3) Street intersections with arterial streets may require additional turn lanes and/or turning islands, resulting in CR and PLR values that would be customized for the intersection design.
- (4) Major Thoroughfare Plan streets shall intersect at continuous centerline extensions and not offset from each other.

(Ord. No. 97568 § 2)

(2) Vertical curvature

A gradual transition from one roadway grade to another shall be accomplished by means of a vertical parallel curve connecting two (2) intersecting tangents. No vertical curve for gradients having an algebraic difference of 1.5 or less will be required. The minimum length of vertical curve shall be computed from the following formula:

$$L = KA$$

Where: L = the length of vertical curve in feet
K = a constant related to sight distance and geometry of a parabolic curve (see Tables 506-3 and 506-4)
A = the algebraic difference in grades in percent

(3) Grade

- A. Street and alley grades shall conform to the terrain and shall not exceed the values prescribed in Tables 506-3 and 506-4, above. No Street or alley grade shall be less than five-tenths of one percent (0.005) or four-tenth of one percent (0.004) if concrete curb and gutter is provided, unless otherwise specified by the Director of Development Services in consultation with the Director of Public Works. The minimum cross-slope of a road shall be 2% and the maximum shall be 4%.
- B. Grades between 12% and 15% can be negotiated by the fire equipment depending upon the length of such grades, and the approach conditions below these grades. The restrictions on using grades between 12% and 15% are contained in Figure 506-2.
- C. The Design Engineer should also note that the maximum grades may also be restricted by drainage considerations. Streets used as drains have maximum flow velocities assigned to control erosion of the pavement (see Table 504-6).

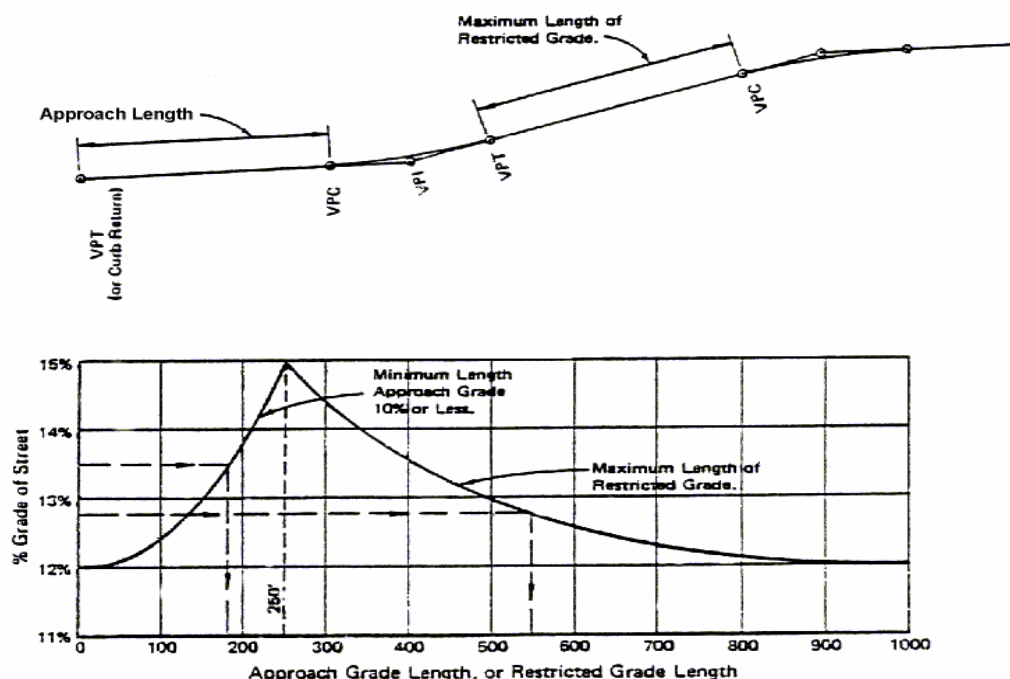


Figure 506-2

(4) Bicycle Facilities

When identified on the City Council approved Bike Facilities Master Plan the following will apply. Required Collector/Main Streets will include bike lanes or bike paths. Bicycle facilities along Arterial / Avenue / Boulevard / Parkway Streets shall be located separate from the pavement section. The bicycle facility, at least 5 feet in width and constructed of an all weather surface on one side of the street, shall be provided between the curb and the right-of-way line or the sidewalks can be constructed at least 8-foot in width on one side of the street to accommodate both pedestrian and bicycle traffic. If separate bicycle facilities cannot be provided, such as along existing collector and arterial streets of sufficient width, bicycle lanes, located within the pavement section, shall be a minimum of 5 feet wide (excluding curb and drain inlets), and shall be signed, striped and marked for bicycle use. Bike paths, when required within the City limits, may be constructed with development of the abutting property at the time building permit acquired.

(5) Intersection Sight Distance

To ensure safety of motorists and other travelers, it is necessary that drivers who are entering an intersection have an adequate view of approaching motorists. This view is required over a clear vision area, which is a right triangle where one side is called "intersection sight distance" and the adjacent side is the distance between the driver and the path of the vehicles

approaching from the side. The clear vision area is that portion of a property over which motorists must see to safely judge and execute a driving maneuver into the intersection and onto the street. This applies to intersections of two or more streets as well as junctions of driveways and streets. Clear vision areas must be free of visual obstructions, e.g. structures, walls, fences, and vegetation, which are higher than three feet and lower than eight feet above the pavement. The American Association of State Highway & Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets, or latest revision thereof determines this length of the required intersection sight distance.

(6) Cul-de-sac Streets

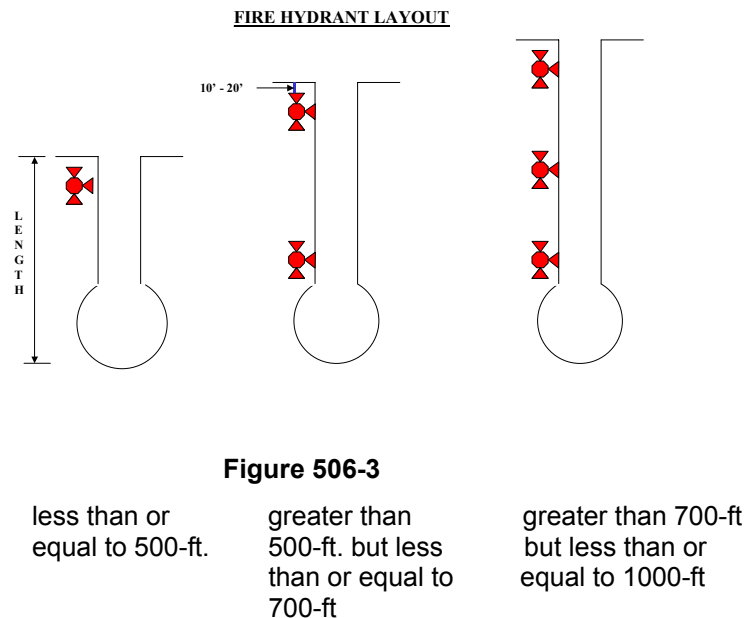
The following criteria shall be used for cul-de-sac street design and fire hydrant layout:

- A.** For Cul-de-sac Streets less than or equal to 500 feet in total length, the following is required:

 - 1. Turnaround right-of-way shall be not less than one hundred (100) feet in diameter in residential areas and not less than one hundred fifty (150) feet in diameter in commercial and industrial areas.
 - 2. Turnaround shall include at least twenty-five (25) feet of paved driving surface with a minimum exterior radius of forty (40) feet for residential areas and sixty (60) feet for commercial and industrial areas.
 - 3. The interior of the turnaround may be landscaped or paved. A maximum radius of fifteen (15) feet will be allowed for landscaping purposes.
- B.** For Cul-de-sac Streets in residential subdivisions greater than 500 feet and less than or equal to 1000 feet in total length, the following is required:

 - 1. Pavement width for the entire length of the Cul-de-sac Street shall be a minimum of 30 feet, regardless of the type of residential subdivision.
 - 2. Turnaround right-of-way shall be not less than one hundred twenty (120) feet in diameter.
 - 3. Turnaround roadway shall have a minimum exterior radius of fifty (50) feet. The entire interior of the turnaround must be paved with no island.
- C.** In the C, RE, and R-20, zoning districts Cul-de-sac Streets over one thousand (1000) feet in length may be permitted subject to approval by the Director of Development Services after consultation with the Fire Chief or his designee. No such approval shall be granted unless the Director of Development Services finds the following:

1. The Cul-de-sac length, layout and topography will not impede safe access and egress by emergency vehicles including fire trucks and emergency medical services
 2. A longer Cul-de-sac Street is needed because of unique topographical conditions such as steep slopes, wetlands, streams, or similar conditions and an alternative design would not more effectively accommodate said conditions.
- D. Fire Hydrant installation. Fire hydrants located in Cul-de-sacs within residential subdivisions shall be located within 500 feet of every building site. In every case a fire hydrant shall be installed on the Cul-de-sac, not more than twenty (20) feet and not less than ten (10) feet from the intersecting street. For Cul-de-sac distances greater than 500 feet but less than or equal to 700 feet, a minimum of two fire hydrants shall be installed. One fire hydrant shall be installed on the Cul-de-sac, not more than twenty (20) feet and not less than ten (10) feet from the intersecting street, and the other at the mouth of the Cul-de-sac not more than ten (10) feet before the beginning of the turnaround. For Cul-de-sac distances greater than 700 feet but less than or equal to 1000 feet, a minimum of three fire hydrants shall be installed. One fire hydrant shall be installed on the Cul-de-sac, not more than twenty (20) feet and not less than ten (10) feet from the intersecting street. A second fire hydrant shall be placed at the mouth of the Cul-de-sac not more than ten (10) feet before the beginning of the turnaround. The third fire hydrant shall be installed as close as possible at the midpoint between the other two. Refer to the figure 506-3 below regarding fire hydrant locations on Cul-de-sacs.



(7) Alleys

Alleys are optional unless required by table 506-4A

(8) Intersection with Alleys and Utility Easements

Where two (2) alleys or utility easements intersect or turn at a right angle, a cutoff of not less than ten (10) feet from the normal intersection of the property or easement line shall be provided along each property or easement line. If the alleys are not straight within each block or if they do not connect on a straight course with the alleys of adjoining blocks, then an easement shall be provided for the placing of guy wires on lot division lines in order to support poles set on curving or deviating rights-of-way or alleys.

(9) Substandard existing Streets

Where subdivisions are adjacent to existing Streets and right-of-way widths of those existing Streets are less than the minimum right-of-way widths as set out in this chapter for all Streets, no building permits shall be granted until the right-of-way widths have been dedicated to the minimum widths required by this Chapter abutting the development. The provisions of this subsection shall not apply within the Infill Development Zone ("IDZ"). Curb, sidewalk and pavement improvements adjacent to the development for multi-family and commercial developments shall be provided on sub-standard width existing streets at the time of building permit. .

(10) Curbs and Pavement

Curbs shall be required on both sides of all interior Streets. Curbs and pavement are required on the development side of all adjacent Streets except:

- A. When the Director of Development Services in consultation with the Director of Public Works determines that the curbs will interfere with or disrupt drainage.
- B. When the Director of Development Services in consultation with the Director of Public Works determines that public construction that would require curb replacement will take place on the Street within three (3) years.
- C. On local type A Streets in single-family or two-family residential subdivisions within the RP and RE zoning districts.
- D. On Streets in residential subdivisions where no adjacent lots are platted if approved by the Director of Development Services, such as Streets adjacent to walls or drainage ways.
- E. Where the Director of Development Services determines that preservation of trees warrants the elimination, reduction in width, or modification to the curb requirements in accordance with the Tree Preservation Standards.

(Ord. No. 97568 § 2; Ord. No. 98697 § 1 & 6)

35-506 continued

(e) Connectivity

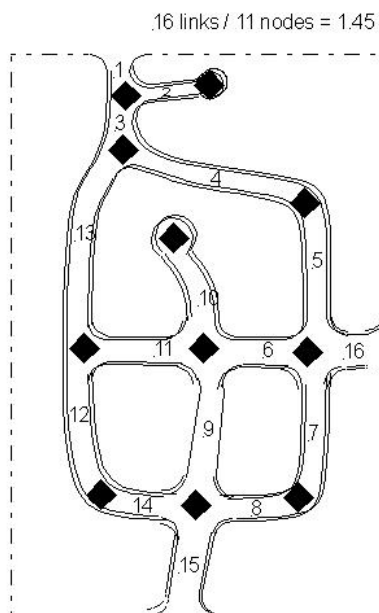
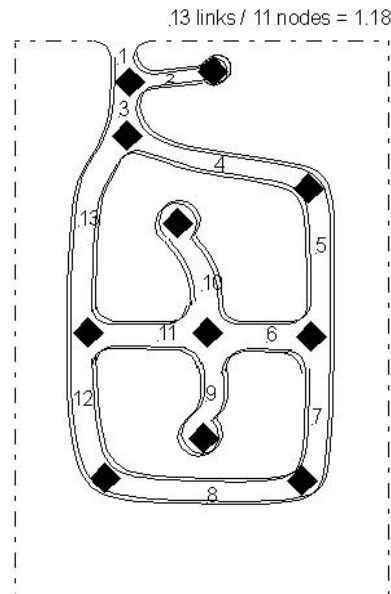
The City Council hereby finds and determines that discontinuous Street systems provide are inefficient and has the effect of channeling traffic onto relatively few points of the transportation network. A well-connected street spreads traffic efficiently, provides greater opportunities for access by service and emergency vehicles, and furthers pedestrian mobility by increasing the number of destinations. (See Master Plan, Urban Design, Policy 1c). Accordingly, this section provides for both external and internal connectivity. External connectivity is promoted by requiring developers to connect to the existing Street network. Internal connectivity is promoted by requiring a connectivity index for internal Streets. The City Council acknowledges that there is a market for cul-de-sacs and Streets with few connections. The connectivity index preserves the opportunity to provide cul-de-sacs while, at the same, maintaining the integrity of the network as a whole. See R. Ewing, *Best Development Practices: Doing the Right Thing and Making Money at the Same Time* (Jan. 1997).

(1) Connectivity Index for Internal Streets

The Streets within any proposed subdivision shall provide a Connectivity Ratio of not less than 1.20. The Connectivity Ratio shall be computed by dividing the number of Street Links by the number of Nodes within the Subdivision. For purposes of this Subsection, the intersection of a local Street within the proposed subdivision with an arterial or collector Street providing access to a proposed subdivision shall not be considered a node in computing the connectivity ratio. The connectivity index will not apply to subdivisions with less than 125 single family lots.

(2) Projecting Streets

Where adjoining areas are not subdivided, the arrangement of Streets in the subdivision shall make provision for the projection of Streets into such unsubdivided areas. Parcels shall be arranged to allow



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the opening of future Streets and logical further subdivision. Where necessary to the neighborhood pattern, existing Streets in adjoining areas shall be continued and shall be at least as wide as such existing Streets and in alignment therewith. Where Streets change design in alignment and width, the Applicant shall provide transition sufficient to ensure safe and efficient traffic flow. This section is not intended to require Local designated streets to project into floodplains, bluffs or other natural features or existing development that has not made accommodations for connection.

(3) Reserve Strips Prohibited

There shall be no reserve strips controlling access to land dedicated or intended to be dedicated to public use. The Applicant shall ensure that there are no reserve strips controlling access to land dedicated or intended to be dedicated to public use.

(4) Half-Streets.

In the case of collector, local, or marginal access Streets, no new half-Street right-of-ways shall be platted. Where the proposed subdivision abuts upon an existing half-Street, the other half of the Street shall be platted.

(5) Dead-end Streets.

Dead-end Streets shall be prohibited except as short stubs to permit future expansion. A "short stub" is defined as being the average depth of the adjacent lot within the subdivision.

(6) Nonaccess easement.

When deemed necessary, and when the connectivity index required above would not be reduced, a vehicular nonaccess easement may be required on a lot(s) for the purpose of controlling ingress and egress to vehicular traffic.

(7) Secondary Access.

At least one access point into a single-family residential subdivision shall be provided for every 2,640 feet (1/2 mile) of frontage. Where a single family residential subdivision exceeds one-hundred twenty five (125) units, a secondary access will be required.

(Ord. No. 97568 § 2)

(f) Street intersections.

Streets shall intersect at an angle of not less than sixty (60) or more than one-hundred twenty (120) degrees. The centerline offset of intersections shall be at least one hundred seventy - five (175) feet.

(Ord. No. 97568 § 2)

(g) Dedication of Arterial**(1) Adjacent streets.**

The subdivider shall dedicate right-of-way width and provide pavement width in accordance with the following table and typical sections in subsection (d) of this Section.

Table 506-5

Street Type	Right-of Way Width	Pavement Width
Primary arterial	60 ft.	24 ft. with curbs
Secondary arterial	43 ft.	24 ft. with curbs

(2) All existing streets.

Where subdivisions are adjacent to existing arterial streets and right-of-way widths of those existing arterial streets are less than the minimum right-of-way widths as set out in this chapter for all streets, the subdivider shall be required to dedicate on the plat one-half (1/2) of the right-of-way width required adjacent to the land being platted to bring the existing arterial streets to the right-of-way widths in accordance with the Major Thoroughfare Plan.

(3) Additional right-of way.

Additional right-of-way beyond that specified by the major thoroughfare plan may be required for major thoroughfares and/or their intersections in order to meet Texas Department of Transportation (TX DOT) requirements. The total right-of-way will generally not exceed one hundred twenty (120) feet. Where TXDOT has plans to acquire right-of-way within 5 years, a right-of-way reservation or a building setback line shall be established to preclude the construction of significant improvements that would ultimately be removed in conjunction with future highway widening.

(Ord. No. 97568 § 2)

(h) Street Names & Signage.**(1) Generally**

Names of new Streets shall not duplicate, or cause confusion with the names of existing Streets, unless the new Street is a continuation of, or in alignment with, an existing Street. All new Street names shall be submitted to and approved by the United States Postal Service.

(2) Within City Limits

Within the incorporated areas of the City, Street name signs shall be installed at all intersections within and abutting the subdivision. Such signs shall be manufactured and

installed by the subdivider in accordance to specifications of, and subject to plan reviews and inspections, by the Department of Public Works. Street name signs shall not be accepted by the City until the Street has been accepted for maintenance by the City, unless approved by the Director of Public Works in order to provide mail service.

(3) ETJ

Within the City's extraterritorial jurisdiction, Street name signs shall be installed at all intersections within and abutting the subdivision. Such signs shall be manufactured and installed by the subdivider in accordance to specifications of, and subject to plan reviews and inspections by the City Department of Public Works.

(4) Warning and Regulatory Traffic Signs.

Within the city limits, regulatory and warning traffic signs shall be installed within and abutting the subdivision in accordance with the *Texas Manual on Uniform Traffic Control Devices (TMUTCD)*, as required by the City's Department of Public Works. Such signs shall be manufactured and installed by the subdivider in accordance to specifications of, and subject to plan reviews and inspections by, City's Department of Public Works. Warning and regulatory signs shall not be accepted by the City until the Street has been accepted for maintenance by the City.

(Ord. No. 98697 § 6)

(i) Street lights.

- (1) Streetlights shall be provided in all subdivisions within the City. Street lights shall be installed by City Public Service at all public Street intersections with other public streets, crosswalks, at safety lane intersections with public streets, midblock areas, or service areas as determined by City policies.
- (2) In subdivisions within the RP or RE zoning districts, or in the ETJ and proposing densities which do not exceed one (1) dwelling unit per acre, the Director of Development Services may waive the requirement for street lights for public street intersections or midblock areas where he finds that the area does not require such lighting for safe pedestrian or vehicular traffic.
- (3) The subdivider shall contract with the City through the Department of Public works for payment of all costs associated with the engineering and installation of Street lighting. Such contracts must be executed prior to issuance of a letter of certification by the Department of Public Works. Full payment for all costs must be made prior to the recordation of the plat. A copy of the current schedule of costs to the City of labor and materials associated with the engineering and installation of street lighting shall be filed by the Director of Development Services with the City Clerk and be available for public inspection. New schedules shall be filed whenever there is an increase in costs.

(Ord. No. 98697 § 1 & 6)

35-506 continued

(j) Private Streets.**(1) Applicability**

Private streets are permitted within Planned Unit Developments, the Business Park (BP) zoning district, and manufactured home/recreational vehicle parks.

(2) Design Standards

The design standards and construction specifications of private streets shall be the same as for public streets except as noted below.

- A. A right-of-way of fifty (50) feet for a local type A streets and sixty (60) feet for local type B streets shall not be required.
- B. The paved street width, exclusive of curb exposures, shall be a minimum of twenty-seven (27) feet for local type A streets and thirty (30) feet for local type B streets.

(3) Certification

Upon completion of construction, the Director of Development Services shall be provided with written a certification signed by a licensed professional engineer certifying that the private Streets and sidewalks (as applicable) were designed and installed as required by the provisions of this Chapter.

(4) Maintenance

Private Streets and sidewalks shall be owned and maintained by a corporation, community association, or other legal entity established for this purpose.

(5) Converting Private Streets into Public Streets

Homeowners Association (HOA) requesting the City to accept private street(s) into the City's street network shall follow this process.

The HOA at their expense must provide an Engineering Report to Public Works Department for review. The Engineering Report shall include.

- A. Request from HOA that the City can accept the private street(s).
- B. Document indicating 100% owner's participation.
- C. Subdivision Plat
- D. Subdivision Construction Plans to include plan and profile
- E. Certification Letter from the Project Engineer certifying the construction of the subdivision was done in accordance with the Public Works Specifications.
- F. Photos showing the conditions of the existing roadway and right-of-way through out the subdivision.

- G. Pavement Condition Index (PCI)
- H. Site Plan showing location of streetlights and traffic control devices (if applicable).

The Engineering Report must be completed before Public Works Department proceeds with the following procedures:

- A. Public Works Department receives Engineering Report and distributes it to appropriate City Departments.
- B. If the City Attorney's Office determines 100% of the legal property owners are represented as supporters of the request, this information is forwarded to the Street Maintenance Division Manager. If support for the ownership transfer is less than 100%, this information is submitted to the Public Works Department who will notify the applicant of the denial of the request.
- C. The Street Maintenance Division Manager will evaluate the PCI Street Surface Condition and Appurtenances Information. If the print out scores indicate low score, then the Street Maintenance Division Manager will submit the information to the Public Works Department who will notify the applicant of the denial of the request.
- D. If the City Engineer determines that the street does meet the minimum requirements, then the recommendation is submitted to the Public Works Director. The Public Works Director will determine whether it is in the interest of the City to accept the street for ownership and maintenance and subsequently notifies the applicant of the decision.
- E. Process for removal of Control Access Facilities (gate, rails, house, etc).

(Ord. No. 97568 § 2; Ord. No. 98697 § 1 & 6)

(k) Traffic signals.

- (1) Where a proposed Street, or driveway, intersects a public Street at an existing traffic signal, the traffic signal shall be upgraded to accommodate the added traffic approach at the expense of the developer or subdivider. The design and construction of this partial signal installation shall comply with the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and City of San Antonio specifications and design requirements.
- (2) Where a proposed intersection involves an existing or proposed arterial Street, and the intersection could reasonably be expected to warrant a traffic signal within approximately five (5) years, the subdivider shall install that portion of the traffic signal infrastructure that is underground on the proposed Street. The design and construction of this partial signal installation shall comply with the TMUTCD and the City of San Antonio specifications and design requirements.

35-506(k) continued

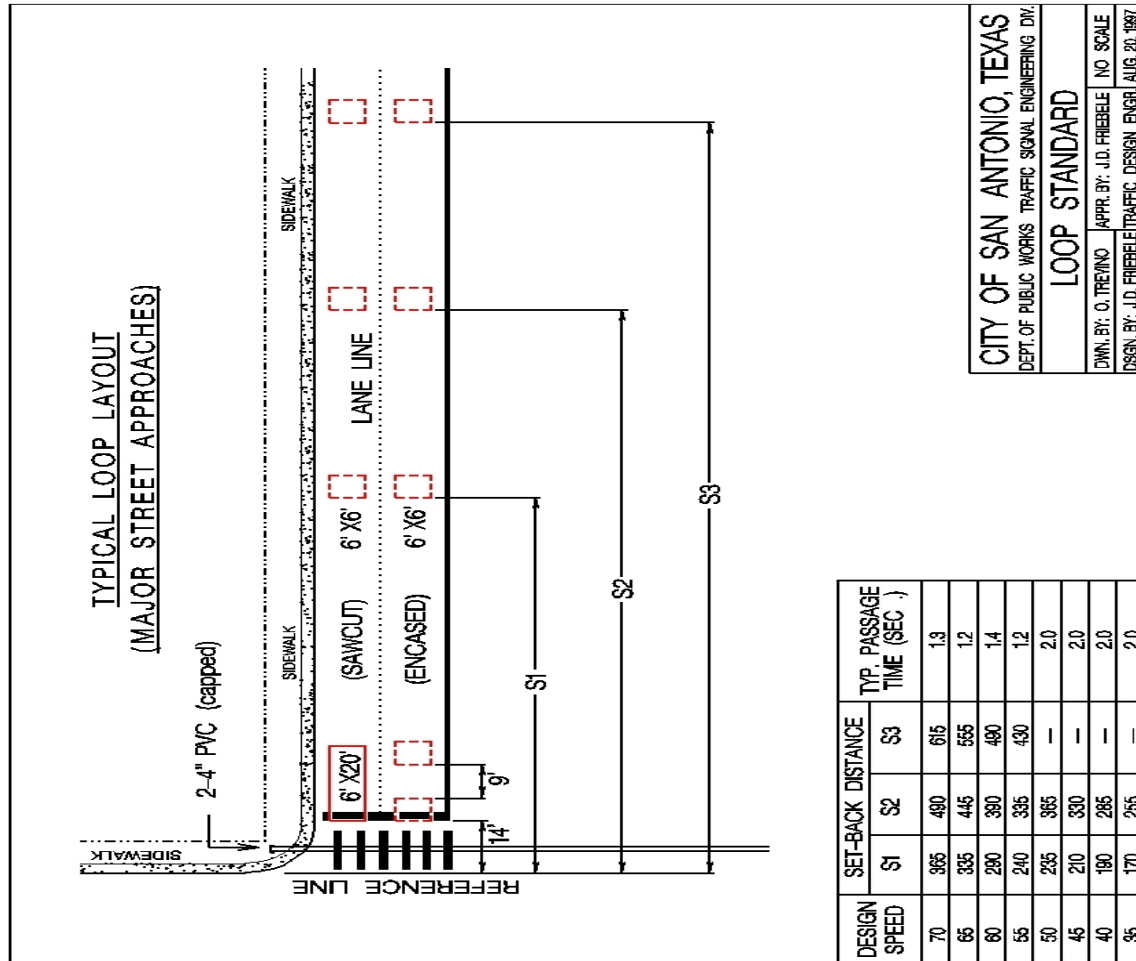
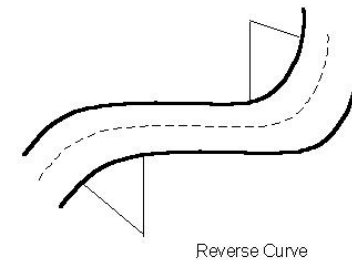
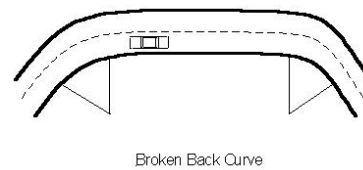
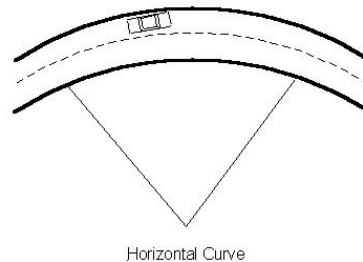


Figure 506-5

(I) Horizontal curvature.**(1) Conventional Design**

Horizontal centerline curvature shall be provided by simple circular curves with a constant radius for the safety and comfort of motorists. The minimum and maximum radii designated in this section, Tables 506-1, 506-4, 506-4a, 506-4b, and Figure 506-1 shall be used in designating horizontal curves. "Broken-back", compound curves, reverse curves shall not be permitted. A minimum fifty (50) foot tangent length is required between curves on local A and B streets. A minimum of one-hundred (100) foot tangent length is required between curves on collector and arterial streets. Super elevation may be used on arterial streets with the approval of the Director of Development Services in consultation with the Director of Public Works.

**(2) Combination of curves.**

A combination of horizontal and vertical curves shall be permitted provided sufficient sight distance is available for safe operation in accordance with the requirement of Subsection (d) of this Section.

(3) "Elbow" Configurations

An alternative design required by Subsection (d) of this Section may be used in lieu of the centerline radius prescribed by subsection (d) of this Section. The point of radius may be relocated along the lines indicated by letters on the figure below (lines AX, AY and AZ). The point of radius shall not exceed fifteen (15) feet from point A. The point of radius shall be shown on the plat. The point of radius may be shifted along the Street centerline (lines AX and AZ) see Figure 506-6.

Figure 506-5

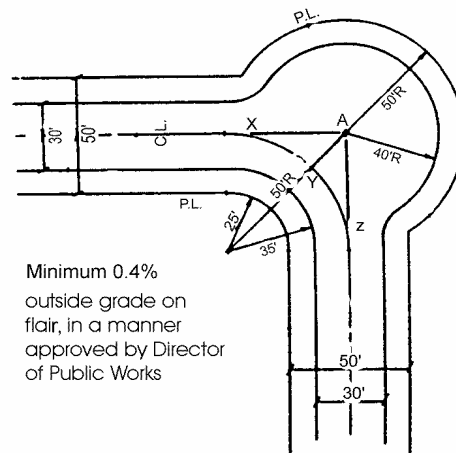


Figure 506-6

(Ord. No. 97568 § 2; Ord. No. 98697 § 1)

(m) Pavement and median transition.

Where cross section changes occur, appropriate pavement transition shall be provided. Transition shall be described as a ratio of lateral transition width to transition length in feet. The following formulas shall be used in computing appropriate transition:

- (1) Local Street to Local Street, Local Street to Collector, Collector to Collector.**

$$L = 20W$$

Where:

- L = Transition length in feet measured along the centerline of the Street.
 W = Transition width measured as the difference in pavement width from the centerline to the pavement edge of the two (2) cross sections.

- (2) Arterial Streets except freeways.**

$$L = DW$$

Where:

- L = Transition length in feet measured along the center line of the Street.
 D = Design speed of 60 miles per hour.
 W = Transition width measured as the difference in pavement width from the center line to the pavement edge of the two (2) cross sections.

(3) Median or Center Dividers

Median or center dividers will also be transitioned. Median transition shall generally parallel the pavement transition to a point where the median width is four (4) feet at which point the median shall be rounded off with a two-foot radius. Median or divider transition shall be designed so that abrupt offsets are not created at intersections.

(Ord. No. 97568 § 2)

(n) Medians**(1) Openings.**

Medians shall be continuous. Openings in the median may be provided for public Streets or driveways provided the centerline spacing between median openings is at least four hundred (400) feet. When medians are open, left turn bays and median radii shall be provided and curbed. Existing medians shall be modified to conform to these requirements where necessitated by the traffic generated by the Proposed Development, as set forth in the Traffic Impact Analysis (see 35-502(l)(1) of this Chapter). Where existing streets are improved, dual left turn lanes can be approved if supported by a TIA (see 35-502).

(2) Special purpose medians.

Dividers constructed for aesthetic purposes such as entrances for subdivisions or landscaping shall be permitted. The minimum width for such dividers is fourteen (14) feet with minimum eighteen (18) feet of pavement width on either side of the median. The divider shall maintain the full width for a minimum twenty-five (25) feet after which an appropriate transition shall be provided in accordance with standards for pavement and median transition (Subsection (m), above). The twenty-five (25) feet shall be measured from the edge of pavement of the ultimate width of the intersecting roadway. The nose or rounded portion of the divider shall be placed two (2) feet off the edge of the traveled roadway of the intersecting Street unless the turning radius of vehicular traffic indicates other modifications to the median nose are required. No signs, walls or fences, trees, shrubs or other ground cover shall be placed in the median which will obstruct the driver's sight distance (See Figure 506-7). The median design and exceptions to pavement width adjacent to median must be approved by the Director of Development Services in consultation with the Director of Public Works.

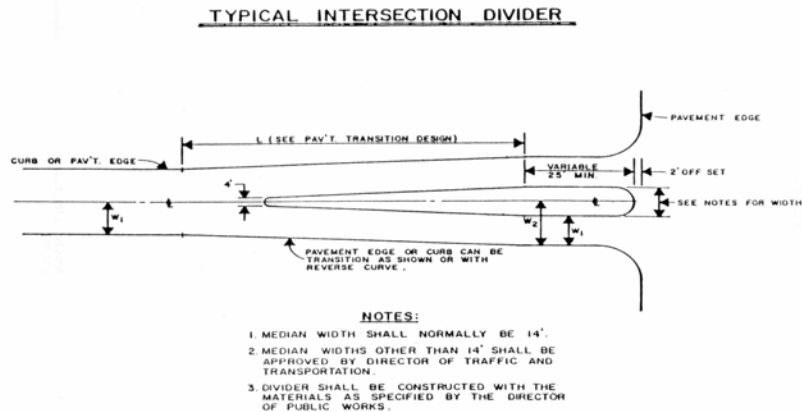


Figure 506-7

Landscaping shall be in accordance with current Landscaping Standards (§ 35-511) design standards. In addition appropriate maintenance agreements shall be made with the Director of Development Services.

(3) Sidewalk Crossings

Where a median or traffic divider projects across sidewalks, the median (concrete or sod) shall be opened for five (5) feet at the projection of the crosswalk. This five (5) foot opening shall be paved to the grade of the existing surface to permit wheelchair and mobility impaired persons to utilize the crosswalk.

(Ord. No. 98697 § 1)

(o) Wheelchair ramps

(1) Location

Wheelchair ramps shall be constructed at the entrance to all crosswalks where sidewalks exist or where required as part of these regulations. A waiver of sidewalk requirements does not waive the wheelchair requirement. Where sidewalks or curbs exist, wheelchair ramps shall be added at locations specified herein, wherever any work is proposed to the existing driveways, curb, or sidewalks. Also, wheelchair ramps shall be added wherever missing sidewalks or curb segments are added in front of any lot or block of a subdivision.

(2) Design Standards

Any construction, reconstruction or other improvements addressed in this chapter shall conform as a minimum to the Americans with Disabilities Act and any rules and regulations relating thereto (see § 35-501(d)). The Plat or Site Plan shall show infrastructure construction, reconstruction, repair or regrading and details of curb cut and wheelchair ramps. The location of the curb-cut opening and ramp must be coordinated with respect to the pedestrian crosswalk lines. This planning must ensure that the ramp openings at a fully depressed curb shall be situated within the parallel boundaries of the crosswalk markings. Ramps for persons with disabilities are not limited to intersections and marked crosswalks, and ramps shall also be provided at other appropriate or designated points where there is a concentration of pedestrian traffic, such as loading islands, midblock pedestrian crossings, and locations where pedestrians could not otherwise recognize the proper place to cross the street. Because non-intersection pedestrian crossings are generally unexpected by the motorist, warning signs shall be installed and parking shall be prohibited. Ramps for persons with disabilities shall have a textured nonskid surface for the user which also warns a sight-impaired person of the presence of the ramp. Wheelchair ramps shall be designed and constructed in accordance with the details in Figure 506-8, below.

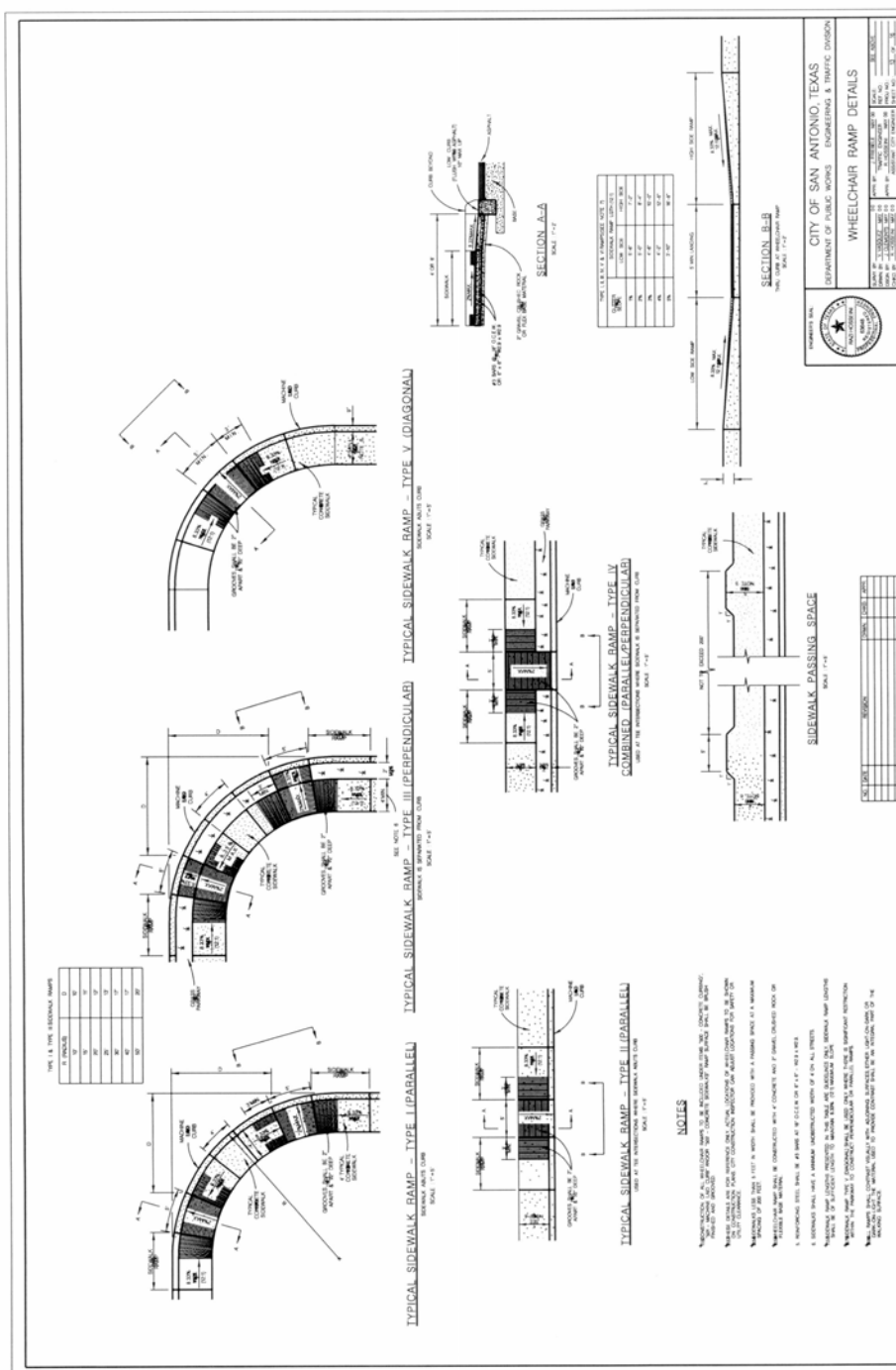


Figure 506-8

(Ord. No. 97568 § 2)

(p) Pavement Standards.

(1) Pavement structure

The design of pavement structures shall be in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Guide for Design of Pavement Structures, 1993 or latest approved edition. The pavement design report shall be prepared and signed by, or under the supervision of, a professional engineer registered in the State of Texas. The following design requirements shall be used for pavement design:

(2) Length of service life

Pavement shall be designed for a twenty-year service life.

(3) Traffic Load, Reliability and Pavement Structures

The traffic load is the cumulative expected 18-Kip equivalent single axle loads (ESAL) for the service life. The following 18-Kip ESAL Reliability Level and Pavement Structure shall be used in the design of streets for each street classification:

**Table 506-6
Pavement Specifications**

Street Classification	18-KIP ESAL	Reliability Level	Minimum Pavement Structure	Maximum Pavement Structure
Primary and Secondary Arterials	3,000,000	R-95	SN = 3.80	SN = 5.76
Collector and Local Type B Streets	2,000,000	R-90	SN = 2.92	SN = 5.08
Local Type A Street with bus traffic	1,000,000	R-70	SN = 2.58	SN = 4.20
Local Type A Street without bus traffic	100,000	R-70	SN = 2.02	SN = 3.18

Traffic loads for primary and secondary arterials, collector and local type B Streets shall include bus traffic.

(4) Serviceability

The serviceability of a pavement is defined as the pavement's ride quality and its ability to serve the type of traffic (automobiles and trucks) which uses the facility. The initial serviceability index (p₀) for flexible pavements shall be 4.2 and for rigid pavement shall be 4.5. The minimum terminal serviceability index (P_t) for local Streets shall be 2.0 and for collectors and arterials shall be 2.5. A standard deviation (S₀) for flexible pavement shall be 0.45 and for rigid pavement shall be 0.35.

(5) Roadbed soil

A soil investigation must be performed for the design of pavement structures. The number of borings and locations shall be sufficient to accurately determine the stratum along the route. Any existing soil information that is available either from the City or from private sources will be evaluated and, if determined to be applicable and valid, will be allowed in place of new soil tests.

Roadbed soil having a plasticity index (P.I.) greater than twenty (20) shall be treated with lime to reduce the P.I. below twenty (20). Application rate of lime shall be determined based on laboratory testing. In no case shall the lime be less than fifteen (15) pounds/S.Y. for six (6) inches of lime treated subgrade. Lime treated subgrade will be included as a "structural layer" within the pavement design calculations. Proposals for stabilization alternatives in place of the use of lime will be considered upon submittal of an engineering report verifying adequate stabilization of the highly plastic soil.

Where the roadbed is in a rock excavation a "Structural Layer" within the pavement design calculations can be used that is equivalent to a structural layer for Lime Stabilized Subgrade. If a roadbed Structural Layer is used in the pavement calculation for rock subgrade an Engineering Report will be provided to Public Works addressing the consistency of the subgrade prior to base placement.

(6) Pavement layer material

Alternative pavement materials may be used where the existing soil or subsurface conditions, or the alternative materials, provide a level of drivability comparable to the materials otherwise required by this Section. Proposals for alternative pavement materials with supporting engineering documentation may be submitted to the City for consideration for use. The combination of the following materials will be allowed for pavement structure:

- A. Lime treatment for subgrade.
- B. Flexible base.
- C. Prime coat.
- D. Tack coat.
- E. Hot mix asphaltic concrete pavement.
- F. Asphalt treated base.
- G. Reinforced concrete.
- H. Base reinforcement (Geogrids).

The Director of Development Services in consultation with the Director of Public Works in accordance with the standards provided herein must approve the pavement combination.

(7) Minimum layer thickness (compacted)

If the following components are utilized in proposed pavement sections, the minimum thickness for the components shall be:

- A. Hot mix asphaltic concrete pavement shall not be less than one and one-half (1 1/2) inches thick for surface course (Type D).
- B. Hot mix asphaltic concrete pavement shall not be less than two and one-half (2 1/2) inches thick for a leveling-up course (Type B).
- C. Asphalt treated base shall not be less than four (4) inches thick.
- D. Flexible base shall not be less than six (6) inches thick.
- E. Lime treatment for subgrade shall not be less than six (6) inches thick.

(8) Curb and gutter

Concrete curbs or monolithic curbs and gutters constructed in accordance with the details shown on Figure 506-9 shall be provided where indicated on the typical cross sections provided in Subsection (d) of this Section.

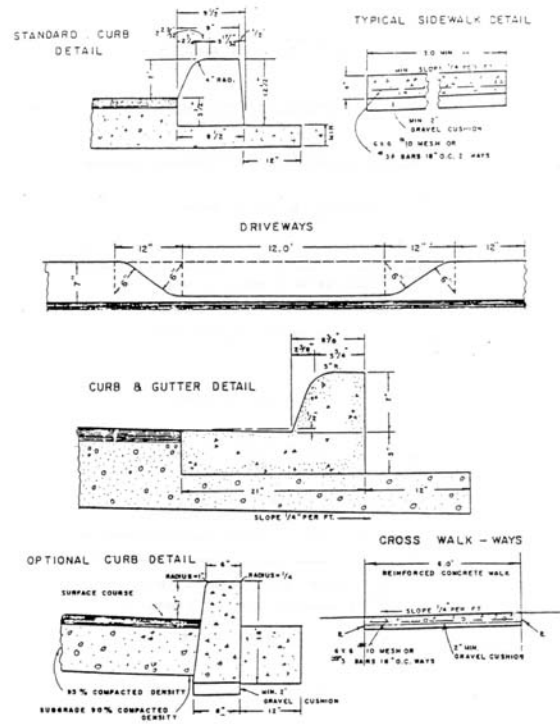


Figure 506-9

(9) Medians and dividers

Medians and dividers having curbs shall be constructed in accordance with the approved cross section. Where divider strips on primary and secondary Streets are constructed without curbs, they shall be graded to a slope of one-quarter (0.25) inch per foot from the center of the divider strip to a point seven (7) inches from above the edge of pavement and from that point to the edge of pavement.

(10) Parkways.

Parkway slopes shall be one-quarter (0.25) inch per foot toward the Street except in heavy cuts, where a maximum of one (1) inch per foot shall be permitted. Landscaping, walls or fences placed in the parkway for aesthetic purposes shall not obstruct sight distance.

(Ord. No. 97568 § 2; Ord. No. 98697 § 1 & 6)

(q) Sidewalk Standards**(1) Applicability**

Sidewalks shall be required on both sides of all internal Streets and the subdivision side of all adjacent or perimeter Streets except as specified in Subsection (2), below. Reverse residential Street lots shall have sidewalks provided on both Street frontages. Sidewalks shall be required as part of the street improvements only on one (1) side of subdivision entry streets unless residential lots are platted or planned to be platted on both sides of the street.

(2) Sidewalk exceptions.

Sidewalks shall not be required in the following situations:

- A. When a pedestrian circulation plan accompanied by the plan review fee specified in Appendix C has been submitted to and approved by the Planning Commission prior to or at the time of plat approval. The pedestrian circulation plan shall show the location and arrangement of all-weather walkways and the phasing or time schedule for the construction of the walkways. In considering the plan, the Planning Commission shall require and may impose conditions to ensure that access to and along the walkway areas is safe, convenient, and provides pedestrians with adequate paths of movement. If the proposed walkways are not located within a public right-of-way, then pedestrian easements shall be included on the plat.
- B. When the Director of Development Services in consultation with the Director of Public Works determines that the sidewalks will interfere with or disrupt drainage.
- C. When the Director of Development Services in consultation with the Director of Public Works determines that public construction which would require sidewalk replacement will take place on the Street within three (3) years.
- D. On local type A Streets in single- or two-family residential subdivisions with a density less than 2.5 residential units per acre.
- E. On Streets in residential subdivisions where no adjacent lots are platted if approved by the Director of Development Services, such as Streets adjacent to walls or drainage ways.

F.

35-506(q) continued

- G. Where the Director of Development Services determines that preservation of trees warrants the elimination, reduction in width, or modification to the sidewalk and curb requirements in accordance with the Tree Preservation Standards.

(3) Planting Strips

When required by Table 506-3 or 506-4 above sidewalks shall be defined by placing a planted strip of not less than two (2) feet minimum between the back of the curb (BOC) and the street edge of the sidewalk. Street trees may be located in the planting strip if trees are a minimum of three (3) feet from the curb.

(4) Performance Agreement and Time of Construction

Sidewalks shall be included as part of the Performance Agreement required by Appendix 35-438 of this Chapter with exception to sidewalks along street frontage of lots within the city limits for which building permits will be required. All sidewalks within a subdivision must be completed when ninety-five (95) percent of the lots within the subdivision are built out, excluding lots for which a building permit is pending.

(5) Width

Except as otherwise specified in Americans with Disabilities Act (ADA) (see § 35-501(e) herein), sidewalks shall have a minimum unobstructed width as follows:

- A. The minimum width of sidewalks adjoining a planting strip shall be four (4) feet in width. The minimum width of sidewalks adjoining the curb shall be six (6) feet in width for Collectors and Arterials and four (4) feet for Residential.
- B. The minimum width of sidewalks located within the boundaries of the "D" Downtown District shall be not less than six (6) feet.

(6) Location

All sidewalk construction shall conform to the latest criteria of the Americans with Disabilities Act (ADA) (see § 35-501(e) herein). Changes in the sidewalk location for a maximum linear distance of two hundred (200) feet are permitted to be approved by the field inspector without amending the Street plan or utility layout provided such plans are annotated with a note stating that intent. During the plat review process, reviewing agencies may designate areas where prior approval of the agency is necessary for any alteration to the sidewalk location. No other changes shall be allowed without the approval of all agencies that approved the original utility layout.

(7) Continuity

Sidewalks shall not be installed in such a manner that they conflict with or are obstructed by power lines, telephone poles, fire hydrants, traffic/Street signs, mail boxes, trees, buildings,

35-506(q) continued

barriers, light poles, or any other structure. The grades of sidewalks shall be such that changes of grades greater than ten percent (10%) are not encountered within blocks. When there is an existing or anticipated obstruction, the sidewalk shall be installed around the object and shall provide the required sidewalk width. When utility layouts are required as part of a plat, the location and extent of sidewalks within the subdivision shall be shown on the utility layout and shall be subject to the approval of the Director of Development Services in consultation with the Director of Public Works and the utility agencies.

(8) Drain Crossings

Pedestrian double rails shall be required on both sides of all sidewalk drain crossings.

(9) Grade

Sidewalks shall be constructed so as to align vertically and horizontally with adjoining sidewalks.

(10) Sidewalks on private Streets.

Sidewalks on private Streets shall meet the same criteria as for public Streets. Sidewalks shall be included in the same lot as the private Streets or within an access easement designated on the plat if located on private lots. Deed restrictions shall be required to ensure that sidewalks remain unobstructed.

(Ord. No. 96564 § 1; Ord. No. 97568 § 2; Ord. No. 98697 § 1 & 6)

(r) Access and Driveways**(1) Applicability**

The provisions of this section shall apply to all Driveways. A lot which is a part of an approved Plat which does not otherwise limit access and which was approved by the City and filed for record as of the effective date of this Section, and which does not have sufficient frontage to meet the driveway approach spacing requirements in this section, shall be allowed one driveway approach.

(2) Single-Family Residential Subdivisions

Where a subdivision abuts a major thoroughfare, lots for single-family residential use in the ETJ or in residential zoning districts shall not front on the thoroughfare, the sole exception shall be lots greater than one (1) acre in size which provide for permanent vehicular turn around on the lot to prevent backing onto the thoroughfare and this restriction should be noted on the plat. Access points which would permit vehicular access to such lots less than one acre in size from the thoroughfare shall be prohibited. However, if conditions are such that vehicular access to such lots cannot be provided other than from the collector or arterial street, the Director of Development Services may permit the creation of a marginal access street or easement to serve two (2) or more lots. The marginal access street or easement shall be

35-506(r) continued

designed to permit entry to the thoroughfare without requiring a motorist to execute a backing maneuver. Marginal access streets or easements shall be included on the subdivision plat.

(3) Commercial, Industrial And Medium Or High Density Residential Developments

Lots in commercial, industrial and medium or high-density residential developments in the ETJ or in the MF, NC, O, C, I-1, or I-2 zoning districts may have vehicular access from a thoroughfare. However, the number of access points permitted will be based on the following criteria: (A) for lots with less than two hundred (200) feet of frontage, one (1) access point may be permitted; (B) for lots with a frontage of two hundred (200) feet or more, one access point for every 200 feet of frontage will be permitted. Driveway spacing will be in accordance with subsection (7) below, if applicable. All lots in NC, O, and C zoning districts with less than 400 feet fronting an arterial Street shall provide for shared cross access with adjacent lots fronting the arterial, by means of platted common access easement across the lot or recorded deed covenant providing common access across the lot with adjacent lot(s).

(4) Additional Access Points

The Director of Development Services (or the Texas Department of Transportation, or county authority, if appropriate) is authorized to permit additional access points under the following conditions: (A) the additional land; and access points are necessary to ensure the property owner beneficial use of the land; and (B) the resulting additional ingress and egress of vehicles will not seriously disrupt the flow of traffic on the thoroughfare.

(5) Location of Access Points

The specific location of access points will be determined by the Director of Development Services (or by the Texas Department of Transportation or county authority, if appropriate) at such time as a site plan is reviewed prior to the issuance of a building permit. The location shall be based on the following criteria: (A) the location shall minimize conflicts with vehicle turning movements; (B) the location shall be located as far as practicable from intersections; and (C) the location shall be not less than fifty (50) feet from another driveway location. If this standard is not possible, based upon the frontage of the property, the location shall be directed as far as practicable from the other driveway locations. Driveways along an arterial within 400 feet of a major intersection, such as the intersection of two arterial streets or the intersection of a collector and an arterial street, may be restricted to right turn movements.

(6) Driveway Throat or Vehicle Storage Length

For purposes of this Subsection, "Throat Length" means the length of extending from the entry into the site to the first left-turn conflict or intersection with a parking aisle. Vehicle Storage Length means the length of a driveway, service lane, bay, or other passageway for motor vehicles which is designed to minimize queuing onto surrounding Streets. Throat Length shall be designed in accordance with the anticipated storage length for entering and exiting vehicles to prevent vehicles from backing into the flow of traffic on the public street or causing unsafe

conflicts with on-site circulation. Throat Length and Vehicle Storage Length shall not be less than the standards set forth in Table 506-7 unless approved by the Director of Development Services. These measures generally are acceptable for the principle access to a property and are not intended for minor driveways.

Table 506-7
Minimum Driveway Throat Lengths

Land Use	Throat Length or Vehicle Storage Length
Shopping Centers > 200,000 GLA	Throat Length 200'
Developments < 200,000 GLA not otherwise enumerated in this Table	Throat Length 75'
Unsignalized driveways not otherwise enumerated in this Table	Throat Length 40' minimum
Residential subdivision entryway (Private, gated entries)	Poisson distributed probability model at a 95% confidence level. In addition, the subdivider shall provide for vehicle turnaround capability based on the single unit design vehicle as provided in the 1990 AASHTO Green Book, or latest revision thereof. The minimum entryway vehicle storage length shall be forty (40) feet.
Single-lane drive-in banks	Sufficient to accommodate minimum queue of six (6) vehicles
Drive-in banks with more than one (1) lane	Sufficient to accommodate minimum queue of four (4) vehicles per service lane
Single-lane drive-through car washes	Sufficient to accommodate minimum queue of twelve (12) vehicles
Automatic or self-serve car washes with more than one bay	Vehicle storage of 60 feet per bay
Fast-food restaurants with drive-in window service	Sufficient to accommodate minimum queue of eight (8) vehicles per service lane
Gasoline service stations with pump islands perpendicular to the pavement edge	Minimum 35 feet between pump islands and right-of-way

Commentary: The throat lengths in Table 506-7 are provided to assure adequate stacking space within driveways for general land use intensities. This helps prevent vehicles from stacking into the thoroughfare as they attempt to access the site. High traffic generators, such as large shopping plazas, need much greater throat length than smaller developments or those with unsignalized driveways. These standards refer to the primary access drive.

(7) Spacing and location on major thoroughfares

This subsection applies to driveway approach spacing and location along major thoroughfares.

- A. Where a Traffic Impact Analysis is required, driveways shall be spaced in such a manner as to avoid reducing the traffic LOS below that established in the Section 35-502 Traffic Impact Analysis.
- B. Along either side of any corner commercial or industrial property the driveway approaches shall be located so as to maintain a minimum distance from the corner of the intersecting roadways equal to 90 percent of the length of the property along the roadway upon which the proposed driveway approach is to be located, or 125 feet, whichever distance is less.

(8) Alignment

Major Driveway approaches, with Peak Hour Trips greater than 100 pht, accessing major thoroughfares shall attempt to meet the following guidelines:

- A. Align with opposing driveway approaches if any, or shall be offset by 175 feet or more to provide adequate left turn storage capacity in advance of each driveway approach and to avoid the overlap of left turn lanes.
- B. Shared among different property owners or users when necessary to maintain minimum spacing requirements.
- C. Planned, when possible, to match existing openings in medians. In addition, no cuts through the left turn reservoir of a median shall be permitted in order to provide left turn movements for driveway approaches accessing major thoroughfares.

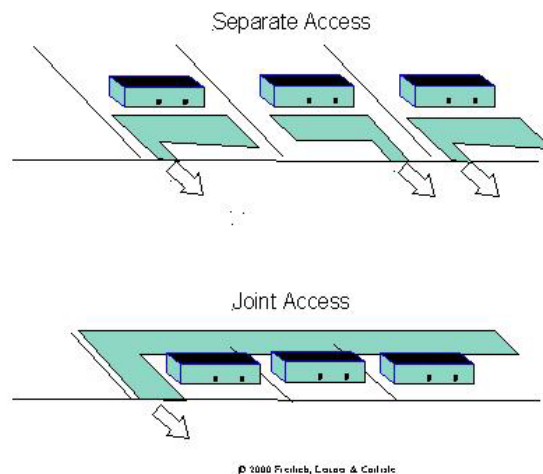


Figure 506-10

(9) Parking Approaches

Parking aisles shall be located a minimum of twenty (20) feet from the intersection of the driveway approach and the Thoroughfare.

(10) Driveway Approaches

Driveway approach materials may be asphalt, concrete or other materials as approved by the Director of Development Services.

(s) Gated Subdivision Streets**(1) Pavement Management**

The Applicant shall include with the Homeowners Association (HOA) documents a forecast and schedule of Street maintenance costs prepared by a licensed professional engineer, licensed as such by the State of Texas. A Maintenance Account with seed money shall be established by the developer to enable the HOA to meet the maintenance schedule until the HOA is self-sufficient. Any HOA requesting that the City acquire their private Streets shall produce documentation that the maintenance schedule set forth in the HOA's original Pavement Management Plan as part of the HOA documents has been followed.

(2) Fire Lanes

The HOA documents shall require the HOAs to identify and enforce a no parking restriction in fire lanes throughout the community.

(3) Master Key Security System

A master key security system shall be provided on all gates. The security system shall include the following:

- A. a gate override in case of power failure; and
- B. a master key provided to the Fire Department, the School District, and Police Department or
- C. a Knox box.

(4) Queuing

At gated entrances where traffic can queue into public streets, the gates and entrances design must provide for sufficient storage capacity such that a poisson distributed probability model (95% confidence level) shows that no queuing vehicles will queue into the public street. The entryway, including the paved surface area lying between the Street providing access to the subdivision and the gates, shall include a turning radius of not less than forty (40) feet.

(5) Connectivity

The street system shall comply with the connectivity standards (Subsection (e) of this Section).

(Ord. No. 97568 § 2)

(t) Traffic Calming

The purpose of this Section, is to protect the public health, safety and general welfare by ensuring that speeds on local Streets are suitable for their intended purpose. The City hereby finds and determines that long blocks, wide Street cross-sections and uninterrupted traffic flows can encourage speeding on local Streets. Accordingly, these design standards will slow traffic on local Streets while allowing flexibility in design and offering Applicants the choice of treatment that works best for the Streets in a Proposed Development.

(1) Applicability

The provisions of this subsection shall apply to Local Streets

(2) Street Lengths

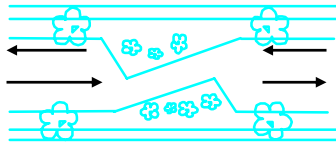

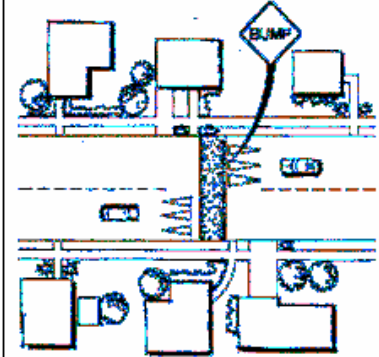

The length of Street Links shall comply with the block length standards established in § 35-515(b)(3) of this Chapter.

(3) Traffic Control Calming Features

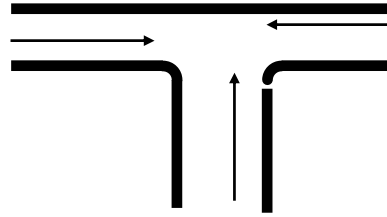
A longer Street length may be allowed through the placement of an approved traffic calming feature at a location which produces an unimpeded length of the Street Link which does not exceed the block length standards (§ 35-515(b)(4)).

Table 506-8 provisions describe and establish standards for permitted traffic calming devices where traffic calming measures are permitted as part of the roadway design elements in subsection B, above. The descriptions in Table 506-8 are described in the document entitled R. Ewing, Traffic Calming: State of the Practice (Institute of Transportation Engineers (ITE) and the Federal Highway Administration (FHWA), 1999), which document is hereby incorporated by this reference. Traffic calming options for Locals and Collector Streets are noted below:

**Table 506-8
APPROVED TRAFFIC CONTROL DEVICES & DESCRIPTION**

<p>Neckdowns/ Flares / Street Narrowing / Intersection Throating. Neckdowns are curb extensions at intersections that reduce roadway width curb to curb. They are sometimes called slow points, nubs, bulbouts, knuckles, or intersection narrowing. These traffic control measures reduce the width of a section of roadway in a gradual manner. They shorten crossing distances for pedestrians and drawing attention to pedestrians via raised peninsulas. By tightening curb radii at the corner, the pedestrian crossing distance is reduced and the speeds of turning vehicles are reduced. The effect of this measure is to reduce speed and discourage non-local traffic. Motorists react to this measure with slower speed because of a concern of a limited travel path.</p>	
<p>Roundabouts / Traffic Circles. are raised circular structures constructed at a three-way or four-way intersection. Its objectives are to slow speeding and reduce the number and severity of vehicular accidents. This measure is most suitable for wide intersections and may accommodate all size vehicles by applying appropriate engineering designs.</p>	
<p>Speed Humps are raised pavement features constructed across the width of the street. The speed hump shall be 3 inches high and 12 feet in length from the leading edge to the trailing edge. This feature discourages motorists from speeding and encourages them to obey the posted speed limit. When speed humps are constructed, advisory signs shall be installed to notify motorists of the speed hump and an appropriate advisory travel speed.</p>	 <p>© 1999 Institute of Transportation Engineers. Used by permission.</p>
<p>Median Islands are raised circular landscaped areas located within non-intersection, midblock locations. Median islands channelize traffic and separate opposing flows. Traffic must slow down to maneuver around a median island. Median islands offer landscaping opportunities and maintenance responsibility. Median islands can be used to protect existing trees. See Figure 506-12</p>	

"T" intersections are at-grade intersections where one of the intersecting Street Links is perpendicular to the other two. Traffic must slow down to negotiate the turning maneuvers in a T-intersection. This roadway feature is very common. Motorists are familiar with T-intersections.



(4) Maintenance

Maintenance of landscaping associated with traffic calming features shall be the sole responsibility of the homeowner's association.

(Ord. No. 97568 § 2)

35-507 Utilities

This Section implements the following provisions of the Master Plan:

- *Urban Design, Policy 1g: Prepare design and construction policies and standards for utility and transportation infrastructure, capital improvement projects, public facilities and development projects that reinforce neighborhood centers and provide diverse, pedestrian-friendly neighborhoods.*
- *Urban Design, Policy 4c: Encourage utility and telephone line locations to be in the rear of property, underground or otherwise give aesthetic and economic consideration to alternative locations.*

(a) Applicability

The provisions of this chapter shall apply to all persons, and political subdivisions of the state, designing or installing or causing to be designed or installed the following within the corporate limits of the City or within the City's extraterritorial jurisdiction, as that term is defined by the Municipal Annexation Act, compiled as V.T.C.A., Local Government Code § 42.001 et seq.:

- (1) sanitary sewers
- (2) storm sewers
- (3) water transmission or distribution lines
- (4) electric power lines
- (5) telephone lines
- (6) natural gas lines
- (7) cable television lines
- (8) recycled water lines

(Ord. No. 97568 § 2; Ord. No. 98697 § 6)

(b) Generally

Easements shall be provided for the utilities set forth in subsection (a), above, as provided herein. Easements widths shall be in accordance with the utility service provider requirements.

(c) Location

All utility lines, including water lines, sewer lines, cable, and electric lines or poles shall be located in accordance with the Right-of-Way Management Ordinance and the Utility Excavation Criteria Manual.

(d) Water, Wastewater and Recycled Water Systems

(1) Generally

All subdivisions within the City and its extraterritorial jurisdiction shall be provided with water and wastewater systems. Water, waste water recycled water systems shall be installed in accordance with the utility service provider's "Utility Service Regulations."

(2) Exemptions

A water supply and distribution system is not required for subdivisions which meet all of the following conditions:

- A. The subdivision is located outside the city limits within its extraterritorial jurisdiction.
- B. The subdivision is located outside the area included within the current San Antonio Water System's master plan for water works improvements; and
- C. Each lot has a minimum size of two (2) acres; and
- D. A potable ground water supply which meets the Texas Department of Health's drinking water standards underlies each lot and such water is available in sufficient quantity to furnish the domestic water needs of the improvements to be constructed on the individual lots within the subdivision.

- E. The plat of the subdivision is annotated with the following note:

I hereby certify to the best of my knowledge that at the time of Planning Commission approval, a potable ground water supply which meets the current standards as established by the Texas Department of Health for drinking water underlies each lot and such water is of sufficient quantity to supply the domestic needs of the improvements to be constructed on the individual lots within the subdivision. Each individual property owner is responsible for the construction of an individual water well that is in compliance with the rules and regulations of the Texas Department of Health.

Registered Professional Engineer

Sworn and subscribed before me this the _____ day of
_____ A.D. _____ [insert year].

Notary Public
Bexar County, Texas

(3) Exemptions Wastewater Collection and Disposal

Connection to a sanitary sewer system is not required for a subdivision that meets both of the following conditions:

- A. Connection to a sanitary sewer system will required unreasonable expenditure when compared with other methods of sewage disposal, Such cost estimates of the sanitary sewage system versus the proposed methods of sewage disposal must be submitted to the San Antonio Water Systems (SAWS) for approval.
- B. Bexar County, or other local authority as warranted, approval to use a non-site sewage disposal system for the subdivision.

(Ord. No. 97568 § 2; Ord. No. 98697 § 6)

(e) Penalties

(1) Nonconforming work

Any plumber whose work does not conform to the regulations and requirements of this chapter, or whose workmanship or materials are of inferior quality, shall, on notice from the Director of Planning, make the necessary changes or corrections at once. If the work has not been corrected after ten (10) days notice, the Director shall refuse to issue any additional permits to such person until the work has fully complied with these requirements.

35-507(e) continued

(2) False Statements or Misrepresentations

The Director of Planning may revoke a permit in the event there has been any false statement or misrepresentation as to a material fact in the application or plans upon which the permit approval was based. No permit fees shall be refunded in such event.

(Ord. No. 98697 § 6)

(f) Easements**(1) Generally**

Easements may be permitted for a specific purpose when requested by a particular utility. Such specific use easements shall be a part of a lot or lots unless designated to be converted into public Street right-of-way. Easements may be designated to be converted into public Street right-of-way on a subsequent plat without vacating and replatting. Such easement shall be annotated with the following note:

"Easement to expire upon incorporation into platted public Street right-of-way."

(2) Use of Easements

If the owner of the property upon which a utility easement is located desires to use it for lawn purposes, fencing across the easement shall be permitted but gates along the side lot lines must be provided. The gates shall be sixteen (16) feet wide (two (2) eight-foot gates) and shall be capable of being opened and closed at all times. These gates shall be secured in the center by a drop rod or some similar device which does not obstruct free passage over the easement. The drop rod may be lowered into a drop rod keeper installed so as to be flush with the ground level. No permanent-type center pole for the gates may be erected. The gates shall remain unlocked at all times. Property owners who do not desire to use a utility easement for lawn purposes may fence their backyard area at the easement line. The property owner is responsible for the maintenance of the unused easement area even though it may be located beyond the rear fence of the property.

(3) Maintenance

Maintenance of the utility easement is the responsibility of the owner of the property upon which it is located. It shall be the duty of the property owner to keep the area clear of any structure, debris, vegetation, trees, shrubs or landscaping whatsoever, except that lawn grass which shall be regularly mowed and controlled may be grown thereon.

(4) Curb Exposure

Normal curb exposure shall be maintained where utility easements intersect Streets.

35-507(f) continued

(5) Overhead Utility Lines

Overhead utility line easements shall be provided to afford clearance from overhead utility lines as specified by the National Electrical Safety Code, City Public Service regulations, and other applicable codes and laws. City public service will provide the information necessary to comply with these requirements.

(6) Connection of Easements

Where utility easements are not themselves straight within each block or if they do not connect on a straight course with the utility easements of adjoining blocks, then an additional easement shall be provided for the placing of guy wires on lot division lines in order to support poles set on curving or deviating rights-of-way or alleys.

(7) Structures within Easements

Permits shall not be issued for construction of fences or other structures not in compliance herewith.

(Ord. No. 98697 § 6)

(g) Overhang easements

In all alleys overhang easements for electric and telephone lines of at least four (4) feet on each side of the alley strip at a height at or above eighteen (18) feet shall be provided.

35-508 *Impact Fees*

(a) *Authority.*

This article is adopted pursuant to V.T.C.A., Local Government Code Chapter 395 and shall not limit the City's authority to impose additional impact fees or charges if such impact fees or charges are specifically authorized by state law and duly adopted by ordinance.

(Ord. No. 98697 § 6)

(b) *Effect on other parts of this code*

This article shall not limit the permissible use of property, density of development, design and improvement standards and requirements, or any other aspect of the development of land or provision of capital improvements subject to the zoning, subdivision, and other regulations set forth in this code.

(c) *Additional requirement*

Impact fees are additional and supplemental to, and not in substitution of, any other requirements imposed by the City on the development of land or the issuance of building permits.

(Ord. No. 98697 § 6)

(d) *Water and Wastewater service*

Impact fees are governed by the utility service provider's "Utility Regulations" which are incorporated by reference into Chapter 35 (Unified Development Code) of the City Code of San Antonio, Texas.

(Ord. No. 97568 § 2)

35-509 *Reserved*

Division 3 Landscaping and Tree Preservation

The purpose of these landscaping, Street tree, screening, and buffer requirements is to provide standards that will protect the health, safety and general welfare of the public, enhance property values, and improve the appearance of the community through preservation of natural resources, trees, and native plants and maintaining the ecological balance of the area. These minimum requirements will:

- *Safeguard and enhance property values and to protect public and private investment.*
- *Encourage preservation of existing trees and other significant vegetation*
- *Encourage proper selection, installation, and maintenance of plant materials that result in the conservation of natural resources, including water.*
- *Reduce the negative environmental effects of development while protecting and enhancing the value of developed properties and the surrounding area.*
- *Reduce soil erosion and increase infiltration in permeable land areas essential to storm water management and aquifer recharge.*
- *Mitigate air, dust, noise, heat and chemical pollution and glare and other adverse environmental effects of development.*
- *Reduce the "heat island" effect of impervious surfaces, such as parking lots, by cooling and shading the surface area and breaking up large expanses of pavement.*
- *Establish a landscape theme including Street trees and Streetscape designs to be used throughout the City to promote the overall character and identity of the community;*
- *Address the design of entryways into the City to express the community's values;*
- *Preserve existing native vegetation as an integral part of the wildlife habitats, and incorporate native plants and ecosystems into landscape design;*
- *Promote innovative and cost-conscious approaches to the design, installation, and maintenance of landscaping while encouraging xeriscape planting techniques, water and energy conservation;*
- *Screen unsightly equipment or materials from the view of persons on public Streets or adjoining properties and buffering from uncomplimentary land uses;*
- *Maintain and increase property values by requiring site appropriate landscaping to be incorporated into development that is designed and installed by a qualified landscape professional.*
- *Promote walkable, pedestrian-scale Streetscapes, traditional neighborhoods, and compact centers by exempting uses which relate to each other functionally and visually from certain requirements of this Section.*
- *Promote water conservation through efficient landscape and irrigation design.*

- *To promote and protect the health, safety, and welfare of the public by creating an urban environment that is aesthetically pleasing and that promotes economic development through an enhanced quality of life.*

This Section implements the following policies of the Master Plan:

- *Neighborhoods, Policy 3c: amend the landscape and other applicable ordinances to include buffering provisions between residential and nonresidential uses.*
- *Natural Resources, Policy 2a: create guidelines for demolition and construction which protects trees and other vegetation.*
- *Natural Resources, Policy 2c: Continue to implement and update, as necessary, the landscape and tree ordinances for public and private properties to emphasize preservation of established native vegetation and use of locally native or adapted drought tolerant species.*
- *Natural Resources, Policy 2d: Continue to implement and update, as necessary, the landscape and tree ordinances for public and private properties to emphasize preservation of established native vegetation and use of locally native or adapted drought tolerant species.*

35-510 Buffers

The intent of buffering is to implement Policy 3c of the Neighborhoods Element of the Master Plan to provide landscaped separation between residential and nonresidential uses and to screen from view certain land uses that may create visual clutter and distraction. The standards of this section provide for increases in the width and the opacity of the buffer yard as the land use intensity of the new or expanded development increases.

(a) Applicability

(1) Activities Subject to Buffer Regulations

This section shall apply to any of the following, except where exempted pursuant to subsection (2), below.

- A. The construction or erection of any new building or structure for which a building permit is required.
- B. Any enlargement exceeding one thousand (1,000) square feet or ten (10) percent in area, whichever is greater, of the exterior dimensions of an existing building for which a building permit is required. When a building or parking lot is enlarged to the extent that a buffer of at least 100 feet in lineal footage is required, the requirements of this Section shall be applied incrementally such that buffers shall be required only in proportion to the enlarged building area or off-street parking area to the existing development. For example, a ten percent (10%) increase requires ten percent (10%) of the required buffering that would otherwise be required for the entire development. No buffer is required if the incremental footage imposed by this section is less than 100 lineal feet.
- C. Any construction of a new parking lot or expansion of an existing parking lot within the Street Yard by more than two thousand (2,000) square feet or ten (10) percent in area whichever is greater.

35-510(a) continued

(2) Exemptions

This section shall not apply to the following situations:

- A. Residential uses adjoining residential uses within any residential zoning district.
- B. Agricultural uses.
- C. Non-residential uses adjoining other non-residential uses of the same zoning classification.
- D. The reconstruction of an existing building of which fifty (50) percent or less of the floor area was destroyed or ruined by flooding, fire, windstorm or act of God. This exemption shall apply only where reconstruction of that building will not result in an increase in building size or paving area of the parking facilities to be provided.
- E. Interior finish work or remodeling in a portion of a building unless the work results in an increase in the paving area of the parking facilities within the Street yard or in an enlargement of the exterior dimensions of an existing building.
- F. Any use, building or structure for which only a change of use is requested, and which use does not increase the existing building square footage.
- G. Single-family dwellings located on an existing lot of record.
- H. Contiguous commercial parcels or land areas under Common Ownership.

Commentary: subsection H addresses situations where a parcel is rezoned with several different zoning classifications, and one of the classifications acts as a "buffer" for the other. For example, a landowner rezones part of a parcel to "L", with a strip adjoining a residential area zoned "O-1." A Type "E" buffer is normally required between the "L" and "O-1" districts. No buffer is required between the portion of the parcel zoned "L" and "O-1" internal to the property in this situation.

(3) Buildings within Street yard of another building

A building located within the Street yard of another building shall be considered as a separate building site unless it has previously been included within an approved landscape plan.

(4) Reduction in Required Buffer Yards

The buffer yard requirements for a property to be developed shall be reduced where:

- A. a buffer yard exists on an abutting property, and the net buffer yard satisfies the minimum buffer yard requirements of this Section; or
- B. the adjoining property owners have provided a written agreement restricting the use of an established or proposed buffer yard to the uses provided for in this Section.

(b) Landscape plan

Landscape materials for buffer yards shall be consistent with Appendix E to this Chapter. A registered landscape architect, where required by this subsection, shall develop a plan that utilizes xeric landscaping and native plants to the extent practicable. Activities subject to this Section which exceed 4,300 square feet of impervious surface shall include materials installed in conformance with an approved landscape plan bearing the seal of a registered landscape architect. The Landscaping Plan shall be approved as provided in § 35-476 of this Chapter.

(c) Types of Buffer Yards Required

- (1) Table 510-1 shows when a buffer yard shall be required to buffer an adjoining zoning district. Uses in the "Adjoining Zoning District" are not required to provide the buffer yard. The applicant shall install the type of buffer yard as indicated in the table.

Commentary: For example, if the proposed development is located in an I-1 zoning district (see row (10) of the table), and the "Adjoining Zoning District" is zoned RE (see the column (2) under Adjoining Zoning District), then the applicant shall install a Type E buffer. In addition, if the development adjoins a Street classified as a "Major Arterial" (see column (12) under the Adjoining Street Classification), then the applicant shall install a Type C buffer yard where the front yard adjoins the Street right-of-way line. However, a proposed development zoned "RE" (see row (2) of the table) which adjoins an "I-1" district (see column (10) of the Table) is not required to provide a buffer yard.

- (2) In order to encourage the preservation of natural vegetation, the Applicant may substitute a Type "N" buffer consistent with subsection (d), Table 510-2 for any category of required.
- (3) Utility companies shall provide a plant buffer within the Street yard of electrical substations, water pumping/storage sites, and wastewater treatment plants. The buffer shall comply with the requirements for a Type "E" buffer, below.

35-510(c) continued

Table 510-1: Required Buffer Yards

Zoning District	Adjoining Zoning District											Adjoining Street Classification		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	RP	RE, R-20	R-6, R-5, R-4, RM-6, RM-5, RM-4, DR	MF-25, MF-33	MF-40, MF-50	NC	O-1, C-1, C-2	O-2, C-3, BP	D	L, I-1	I-2	Major Arterial	Minor Arterial	Collector
(1) RP	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a
(2) RE, R-20	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a
(3) R-6, R-5, R-4, RM-6, RM-5, RM-4, DR	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a
(4) MF-25, MF-33	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	F	A	N/a	N/a
(5) MF-40, MF-50	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	A	N/a	N/a
(6) NC	C	C	B	N/a	N/a	N/a	N/a	N/a	N/a	E	E	B	A	A
(7) O-1, C-1, C-2	C	C	B	N/a	N/a	A	N/a	N/a	N/a	E	E	B	A	A
(8) O-2, C-3, BP	C	C	C	C	N/a	A	N/a	N/a	N/a	N/a	D	B	B	A
(9) D	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a
(10) L, I-1	E	E	D	E	E	E	E	N/a	N/a	N/a	N/a	C	C	B
(11) I-2	F	F	F	F	F	E	E	D	N/a	N/a	N/a	C	C	B

Notes: A, B, C, D, E, F: Buffer Yard Type Designations as shown in Exhibit below.

N/a: Not applicable – buffer yard not required.

* Where a use zoned O-1, C-1, C-2 adjoins an existing platted subdivision zoned RE or R-20 as of the effective date of this Chapter, a Type "D" Buffer shall be applied. Where a use zoned BP, O-2 or C-3 adjoins an existing platted subdivision zoned RE or R-20 as of the effective date of this Chapter, a Type "F" Buffer shall be applied.

(d) Buffer Types

- (1) There are seven (7) types of buffer yards. Table 510-2 shows the minimum width and number of trees and/or plants required for each one hundred (100) lineal feet for each buffer yard. Figure 510-1 illustrates a typical buffer yard for each type. Each buffer yard type provides several plant material options. The Applicant may either plant new trees or plants, or preserve existing trees or plants, within the required buffer which meet the requirements of this subsection.

35-510(d) continued

Table 510-2. Minimum Plant Materials Required for Each Buffer Yard Type

Buffer Yard Type	Minimum Width (in feet)	Trees ¹		Shrubs ³			Fence (F), Berm (B) or Wall (W) ⁷
		Canopy	Understory ²	Large ³	Medium ⁵	Small ⁶	
A	10	2	2	-	-	16	-
Option	10	2	2	-	8	-	-
B	15	2	2	8	12	-	-
Option	15	2	2	6	8	6	-
C	15	2	4	9	8	-	F or W
Option	15	2	3	10	10	-	F or W
D	25	2	4	9	8	-	F or W
Option	25	2	3	10	10	-	B
E	30	2	4	14	4	4	F or W
Option	30	2	3	12	8	4	B
F	40	2	4	9	5	-	B & W
Option	40	1	4	6	8	8	B
N ⁸	20% reduction with minimum of 10 feet	Any combination of trees or shrubs is acceptable where: (1) the existing vegetation provides at least the number of equivalent planting units required by the required by Table 510-1 (see subsection (d)(2), below), or (2) the existing vegetation provides complete visual screening from the adjoining property.					-

¹ Canopy Trees required for Buffer Yard Types D, E, and F shall be large, shade trees, that reach a mature height of 60+ feet. See Appendix E. Where existing or proposed overhead electric lines conflict with tree canopies, understory trees may substitute for canopy trees.

² An understory tree is a small to medium deciduous tree, with a mature height of 15 to 25 feet.

³ At a minimum, 50 percent of the shrubs for Buffer Yard Types D, E and F shall be evergreen.

⁴ A large shrub is no more than 25 feet in height at maturity and may be either deciduous or evergreen.

⁵ A medium shrub is between 5 and 10 feet in height at maturity and may be deciduous or evergreen.

⁶ A small shrub is no more than 5 feet in height at maturity and may be either deciduous or evergreen.

⁷ A fence or wall a minimum height of six (6) foot high and two (2) one-half (½) inches thick shall be required where the land use abuts a residential district. The fence, wall or berm is required in addition to the trees and shrubs required by Table 510-2.

⁸ Natural area with native vegetation may be used to meet any of the above buffer yards requirements if the criteria of Table 510-2 are met. The width of a buffer yard shall be reduced by 20% when the criteria of Table 510-2 provided that the minimum width shall not be less than ten (10) feet. Irrigation requirements may be waived if no additional planting is required to meet this criteria.

Illustration of Buffer Yards

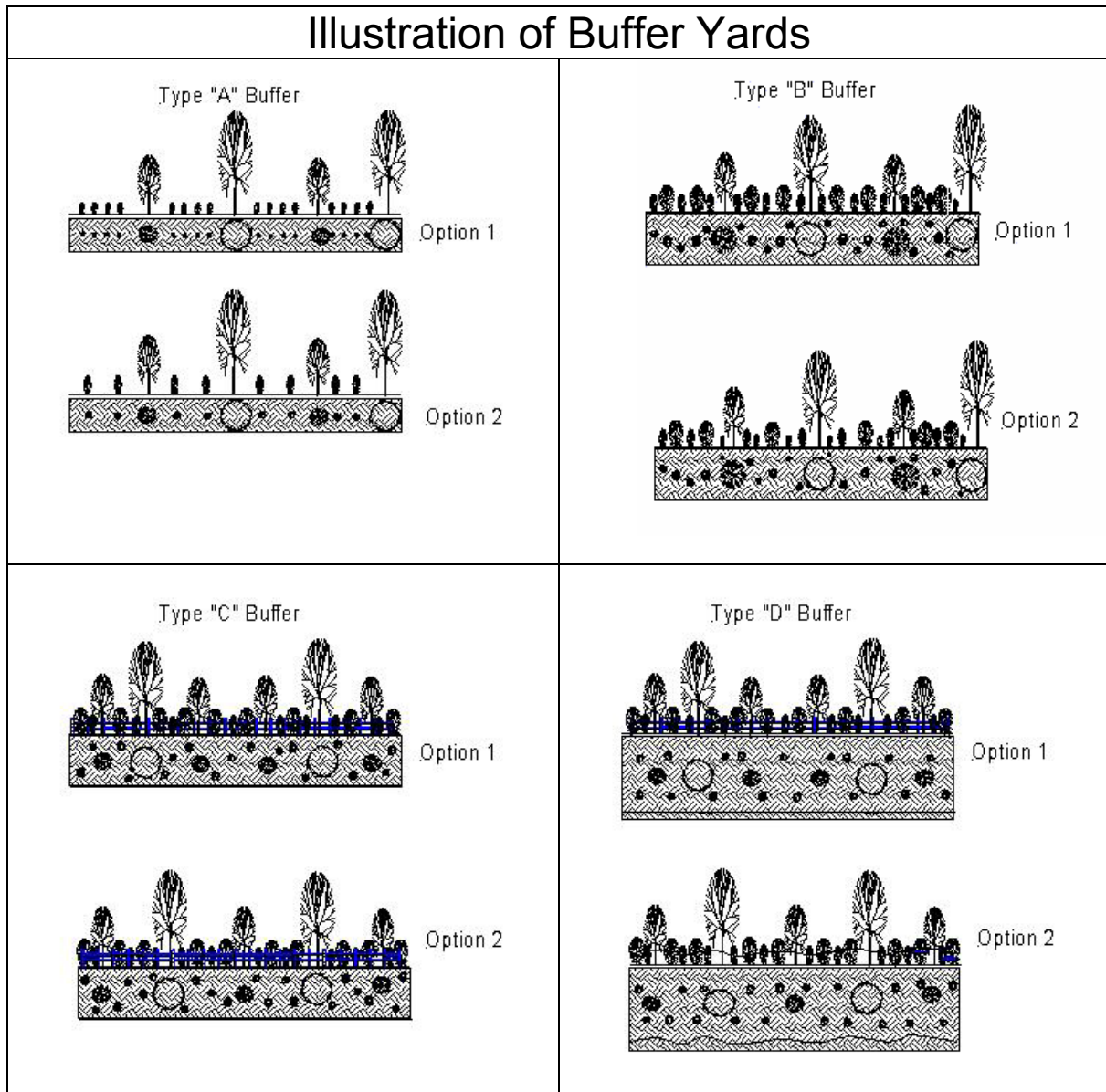
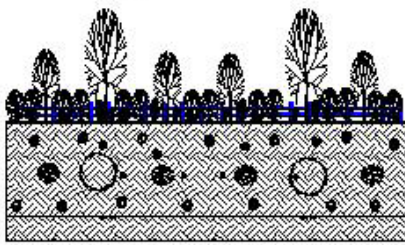
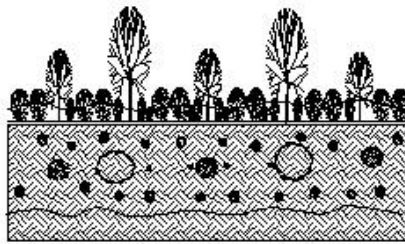


Illustration of Buffer Yards

Type "E" Buffer

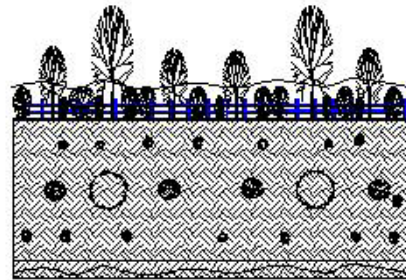


Option 1

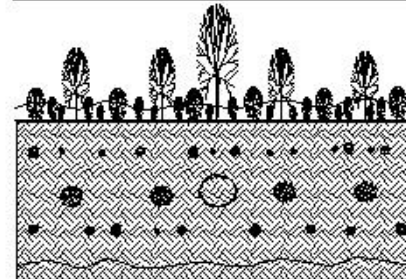


Option 2

Type "F" Buffer

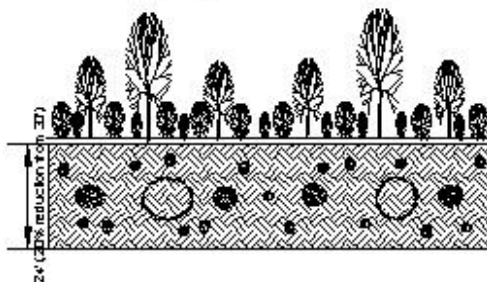


Option 1



Option 2

Type "N" Buffer
(Type "E" Baseline)



Key to illustrations:



Canopy Tree



Understory or Small Tree



Large shrub



Medium shrub



Small shrub



Fence



Berm

35-510(d) continued

- (2) The number of equivalent planting units (EPU's) for purposes of applying a Type "N" buffer, above, shall be calculated based on the following ratios: Canopy Trees = 1 EPU, Understory = 0.5 EPU, Large Shrubs = 0.25 EPU, Medium Shrubs = 0.1 EPU, and Small Shrubs = 0.05 EPU. Each buffer Type "A" through "F", above, shall be assigned the following number of EPUs for purposes of determining whether a Type "N" buffer may be substituted:

Buffer Type	EPU's
A	2.3
B	5.2
C	10.8
D	10.8
E	11.7

(Ord. No. 96564 § 2)

(e) Location of Buffer Yard

- (1) A Buffer Yard required by this Section shall be provided along the side lot line of Abutting uses.
- (2) Buffer Yards are not required along the front property line.
- (3) At the rear property line of adjoining uses for which a Buffer Type A, B, or C is required in Table 510-1, the Applicant may elect to provide a solid fence at least six (6) feet in height in lieu of the buffer yard.

(f) Permitted Uses within the Buffer Yard

No active recreation area, storage of materials, parking, or structures, except for necessary utility boxes and equipment, shall be located within the buffer yard. The buffer yard may be included in the required building setback. Buffer yards may be used as a Greenway as defined in the Parks/Open Space Standards.

(g) Size and Type of Plant Materials

Trees shall measure a minimum of 1½ inch caliper when measured six (6) inches above grade. Shrubs shall reach a mature height within five (5) growing seasons but in no case shall required shrubs measure less than the height required by Table 511-1 at the time of planting, when measured from the grade to the top horizontal plane of the shrub. Plant materials shall be selected from the Plant List in Appendix E. Substitutions may be permitted based on the recommendation of the qualified landscape professional preparing the plan. In addition, if a listed species is infested by fungi, disease or pests, a substitution may be recommended. In no case shall monoculture be permitted. Plant materials shall show a variety of texture, color, shape and other characteristics.

35-510 continued

(h) Fences and Walls

- (1) Fences or walls shall be a minimum height of six (6) feet when used in Type D or E, and F Buffer Yards.
- (2) No fence or wall shall be required if an existing fence or wall on abutting property meets the requirements of this section.
- (3) The fence or wall shall be solid and one hundred (100) percent opaque, except as otherwise required herein. Fence material shall be a minimum of one-half (½) inches in thickness and of wood, precast concrete, metal, or wrought iron with an adjoining hedge which provides an opaque barrier. Corrugated and galvanized steel or metal sheets shall not be permitted.
- (4) Walls may be concrete, concrete block with stucco finish, masonry, stone or a combination of these materials. The support posts shall be placed on and faced toward the inside of the developing property so that the surface of the wall or fence is smooth on the adjoining property side.

(i) Berms

Berms shall have a slope not greater than the slope created in three (3) horizontal feet with a one (1) foot vertical rise. The surface of the berm that is not planted with trees and shrubs shall be covered with grass, perennial ground cover, vines, woody and herbaceous perennials, with mulch. Grass or other coverings shall be maintained in conformance with applicable City codes.

(j) Irrigation Required

Where an irrigation system is required, the irrigation system shall comply with the requirements of 30 TAC Chapter 344, §§ 344.72 – 344.77. No irrigation is required for a Type “N” buffer if no additional planting is required. An in ground irrigation system consisting of water lines, water emitters and a controller is required to have a separate meter service if the San Antonio Water System is the water purveyor. In addition to the above irrigation requirements the installation shall be designed in compliance with Section 35-511 Landscaping, Section (c) (6)

(Ord. No. 95573 § 7; (Ord. No. 98697 § 6)

35-511 Landscaping

In addition to the purposes recited generally for this Division, the purpose of this Section is:

- *To improve the appearance of commercial properties when viewed from the Street.*
- *To screen the unattractive aspects of commercial properties.*

(a) Applicability**(1) Generally**

This section shall apply to any of the following, except where exempted pursuant to subsection (2), below.

35-511(a) continued

- A. The construction or erection of any new building or structure for which a building permit is required.
- B. Any enlargement exceeding one thousand (1,000) square feet or ten (10) percent in area, whichever is greater, of the exterior dimensions of an existing building for which a building permit is required.
- C. Any construction of a new parking lot or expansion of an existing parking lot within the Street Yard by more than two thousand (2,000) square feet or ten (10) percent in area whichever is greater. Parking lots in residential zoning districts shall be subject to the requirements of subsection (e) of this Section.

(2) Expansion

When a building or parking lot is enlarged, the requirements of this Section shall be applied incrementally such that landscaping shall be required in the same proportion that the enlarged building area or off-street parking area has to the existing development. For example, a ten percent (10%) increase requires ten percent (10%) of the required landscaping.

(3) Exemptions

This section shall not apply to the following situations:

- A. Residential uses located within a residential zoning district.
- B. Agricultural uses
- C. The reconstruction of an existing building of which fifty (50) percent or less of the floor area was destroyed or ruined by flooding, fire, windstorm or act of God. This exemption shall apply only where reconstruction of that building will not result in an increase in building size or paving area of the parking facilities to be provided.
- D. Interior finish work or remodeling in a portion of a building unless the work results in an increase in the paving area of the parking facilities within the Street yard or in an enlargement of the exterior dimensions of an existing building.
- E. Any use, building or structure for which only a change of use is requested, and which requires no structural modifications that would increase its volume or scale.
- F. Single-family dwellings located on an existing lot of record.

(4) Buildings within Street yard of another building

A building located within the Street yard of another building shall be considered as a separate building site unless it has previously been included within an approved landscape plan.

(b) Landscape plan

Activities subject to this Section which exceed 4,300 square feet of impervious surface shall include landscape materials installed in conformance with the approved landscape plan bearing

35-511(b) continued

the seal of a registered landscape architect. The Landscaping Plan shall be approved as part of the underlying Application.

(c) Mandatory Criteria**(1) Screening**

Off-Street loading spaces, refuse and outdoor storage areas, antennas, satellite dishes, and mechanical equipment within the Street yard shall be screened from all public Streets. The screening shall be a minimum of six (6) feet in height or a height sufficient to obscure the area or equipment requiring the screening, whichever is less. The screening may be provided by plants, a solid screen fence or wall, or a combination thereof. The height of plants shall be based on reaching their size at maturity within five (5) growing seasons.

(2) Acceptable landscape materials

- A. No artificial plant materials shall be used to satisfy the requirements of this section.
- B. Plant materials required by this section shall comply with the minimum size requirements of Table 511-1 at the time of installation. Plant height shall be measured from the average grade level of the immediate planting area to the top horizontal plane of the shrub at planting, for single trunk trees, the measurement shall be taken at 6 inches above grade level, and for multi-trunk trees, the tree shall be measured from the average grade level of the immediate planting area.
- C. Planting areas shall consist of permeable surface areas only. The permeable surface areas for shrubs may be included within permeable surface areas required for trees.
- D. In satisfying the requirements of this section, the use of four (4) inches of organic mulch material shall be provided at the time of planting.
- E. Each large tree, small tree or large shrub shall be planted at least thirty (30) inches from the edge of any paved surface.

Table 511-1

	Minimum Caliper at the Time of Planting	Minimum Height at the Time of Planting	Minimum Planting Area
Trees	1½ inches for single trunk trees	Not applicable unless multi-trunk trees, in which case the tree shall be a minimum of six (6) feet in height at the time of planting	One hundred (100) square feet.
Small trees	1½ inches for single trunk trees	Six (6) feet for multi-trunk trees	Twenty-five (25) square feet
Large shrubs	Not applicable	Two (2) feet	Nine (9) square feet
Small to medium shrubs	Not applicable	One (1) foot	Eight (8) square feet

35-511(c) continued

(3) Protection of Plant Areas

Plant areas must be protected from vehicular traffic through the use of concrete curbs, wheel stops, or other permanent barriers.

(4) General maintenance

Required plants shall be maintained in a healthy condition at all times. The property owner is responsible for regular weeding, mowing of grass, irrigating, fertilizing, pest prevention, pruning, and other maintenance of all plantings as needed. Any plant that dies shall be replaced with another living plant that is comparable to the existing plant materials or plant materials specified in the approved landscape plan within ninety (90) days after notification by the City. The Director of Development Services may extend this time period up to an additional ninety (90) days due to weather considerations. If the plants have not been replaced after appropriate notification and/or extension, the property owner, or his designee or lessee shall be in violation of this Chapter.

(5) Utility Lines

Any damage to utility lines resulting from the negligence of the property owner or his agents or employees in the installation and maintenance of required landscaping in a utility easement is the responsibility of the property owner. If a public utility disturbs plants within a utility easement, it shall make every reasonable effort to preserve the plants and return them to their prior locations after the utility work. However, if some plants die, it shall be the obligation of the property owner to replace them.

(6) Irrigation

Landscaped areas shall be irrigated with a system that is suitable for the type of plantings installed. Where an irrigation system is required, the irrigation system shall comply with the requirements of 30 TAC Chapter 344, §§ 344.72 – 344.77. An in ground irrigation system consisting of water lines, water emitters and a controller is required to have a separate water service if the San Antonio Water System is the purveyor. In addition to the above irrigation requirements the following is required:

A. Design requirements:

1. Pressure

- (a) System to be designed to the lowest static pressure available in a twelve month period.
- (b) If static pressure exceeds design pressure by 15 PSI or more in any zone a flow control device shall be installed.
- (c) Pressure at any point within a zone shall not vary by more than 10% from the design sprinkler operating pressure.

2. Provide separate zones for:

- (a) Turf
- (b) Plants with dissimilar water requirements
- (c) Areas with greater or lesser sun exposures
- (d) Slopes from flat/level areas (topographic information is required for zoning for slope and flat/level area design).

35-511(c) continued

3. Sprinkler head spacing
 - (a) Head spacing shall not exceed 50% of diameter
 - (b) Spacing shall make allowance for local wind conditions
 - (c) Trim perimeters with correct arc and radii selection to eliminate water thrown onto non-landscaped areas
 - (d) Show radius/diameter and arc of coverage of a representative number of each type of sprinkler head
 4. Landscape water schedule - produce a water schedule for the landscape at a minimum of 80% ET (evapotranspiration) as determined by the local ET.
- B. Equipment
1. Controller requirements
 - (a) On/off rain switch or other rain shut off device that does not alter program
 - (b) Multiple programming capacity
 - (c) Controllers capable of 3 cycles per program
 2. Valves: Flow control devices on all remote control valves (including a master control valve).
 3. Sprinklers
 - (a) Use of low-angle heads is encouraged.
 - (b) Pop-up sprinklers and shrub risers will be at a height to clear turf, trees, shrubs, other planting and objects such as fences allowing no obstruction of spray pattern.
 - (c) Pop-up type shrub risers should be used in areas where pedestrians/auto traffic may occur. Drip irrigation should be used in areas between the curb and sidewalk and parking lot areas where over spray onto pavement may occur in accordance with manufacturers recommendations.
 - (d) Low head drainage is to be eliminated or minimized through design or by use of check valves.
 - (e) Sprinkler heads shall be attached to rigid lateral lines with flexible material, swing joints
 - (4) Any device on a pressurized line (such as a quick-coupler valve) should be preceded by some sort of isolation valve separate from the primary shut-off valve.

(7) Parking lot shading**A. Applicability**

Shading shall be required for parking lots subject to this Section that are located within the project area, and any parking areas (excluding driveways or garages) in residential districts. Canopy trees, as defined in Appendix A, shall be provided to shade a minimum of twenty-five (25) percent of a parking lot. Medium or large trees may be used. A "parking lot" does not include an area used exclusively for the display of motor vehicles for sale as part of an automobile dealership.

35-511(c) continued

B. Calculation of Shaded Area

Existing trees preserved on a site within 12 feet of any edge of a parking lot or in an island or peninsula not less than 9 feet by 18 feet shall be calculated at 100% of the shade coverage shown in Appendix E, under "Shade Area."

Newly planted trees planted in an island or peninsula not less than 9 feet by 18 feet shall be calculated at 75% of the shade coverage shown in Appendix E, under "Shade Area."

Newly planted trees planted adjacent to a parking lot within 12 feet of any edge of a parking lot shall be calculated at 50% of the shade coverage shown in Appendix E, under "Shade Area."

C. Design

Trees shall be planted within an island not less than 9 feet wide by 18 feet deep.

(Ord. No. 95573 § 7 Amendment G; Ord. No. 97602 § 4; Ord. NO. 98697 § 4 & 6)

(d) Elective Criteria**(1) Generally**

In addition to the mandatory requirements, landscape plans shall earn a minimum of seventy (70) points awarded for elective requirements. As an exception to this requirement, landscape plans for commercial parking lots and uses which do not include any off-Street parking within the Street yard shall earn a minimum of twenty-five (25) points.

(2) Tree preservation

A maximum of forty (40) points shall be awarded for the preservation of existing healthy trees. Full credit in accordance with the criteria listed below shall be earned for the preservation of trees within the Street yard up to thirty (30) points. Half credit may be earned for preserving trees within the Street yard above *thirty* (30) points. Half credit may also be earned for preserving trees outside the Street yard up to a maximum of fifteen (15) points. These points shall be included within the maximum *forty* (40) points permitted by this elective. Points shall be tabulated for each tree retained in accordance with the following criteria:

Description	Points Awarded
Caliper equal to or exceeding 4, but less than 6 inches	3
Caliper equal to or exceeding 6, but less than 12 inches	4
Caliper equal to or exceeding 12, but less than 18 inches	6
Caliper equal to or exceeding 18 inches	8

Where credit for the preservation of existing trees is being requested, these areas shall be protected as follows.

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- A. A protective barrier, beginning at the outside of the drip line of the tree, to protect the root protection zone shall be erected and maintained until construction is completed.
- B. During construction, no excess soil, additional fill, equipment, liquids, or construction debris shall be placed inside the protective barrier, upon the root protection zone, nor shall any soil be removed from within the barrier.
- C. The proposed finished grade and elevation of land within the root protection zone of any tree to be preserved shall not be raised or lowered more than two (2) inches. Welling and retaining methods are allowed outside the root protection zone and shall be done in conformance with the Texas A & M University, Extension Landscape Horticulture, "Protecting Existing Landscape Trees from Construction Damage Due to Grade Changes", Everett E. Janne and Douglas F. Welch, PhD., authors.
- D. The root protection zone for each preserved tree shall remain unpaved and shall have a two to four inch layer of mulch installed to help retain moisture and to prevent erosion.

(3) Screening of Surface Parking

Twenty-five (25) points are awarded for screening a surface parking lot within the Street yard in accordance with the following subsections.

- A. The screening must extend along the entire street frontage of the surface parking lot, exclusive of driveways.
- B. The screening must be at least thirty (30) inches in height. If plants are used, they must achieve the minimum height and form an opaque visual barrier at maturity. If nonliving materials are used to satisfy the screening requirement, plants must be provided along a minimum of twenty-five (25) percent of the screen's frontage.
- C. Any screening placed in a clear vision area must comply with the restrictions contained in § 35-506 of this Code.

(4) Parking Lot Shading

Twenty (20) points are awarded for compliance with subsection (c)(7), above. Further, an additional

- A. Five (5) points are awarded when surface parking lots include canopy trees, as defined in Appendix A, which shade a minimum of thirty-five (35) percent of the entire parking lot; and
- B. Fifteen (15) points are awarded when surface parking lots include canopy trees, as defined in Appendix A, which shade a minimum of fifty (50) percent of a parking lot.

35-511(d) continued

(5) Street trees

Twenty-five (25) points are awarded for the installation of large trees that meet the following requirements:

- A. The trees extend along a minimum of seventy-five (75) percent of the total frontage of the Street yard of the parcel;
- B. The trees shall be spaced on average no more than fifty (50) feet apart measured from trunk to trunk provided the distance between trees does not exceed one hundred (100) feet; and
- C. The trees shall be located no more than seventeen (17) feet from the Street right-of-way line.

(6) Understory preservation

15 additional points can be earned for preservation of existing vegetation adjacent to parking lots or by planting new vegetation utilizing a mixture of canopy trees with understory trees (small species) and large to small shrubs with ground plane perennials. Minimum area of understory preservation shall be ten (10) feet x twenty (20) feet. Where understory does not exist on a site under canopy trees, new understory plants from Appendix E may be installed to meet the above criteria.

Where credit for the preservation of existing understory is being requested, these areas must be protected as follows.

- A. A protective barrier must be erected around the perimeter of each understory area to be preserved and maintained until construction is completed.
- B. During construction, no excess soil, additional fill, equipment, liquids, or construction debris shall be placed inside the protective barrier nor shall any soil be removed from within the barrier.
- C. The proposed finished grade and elevation of land within six (6) feet of an understory area to be preserved shall not be raised or lowered more than three (3) inches unless compensated for by welling or retaining methods.

(7) Infill or Commercial Retrofit Use Patterns

Twenty-five (25) points shall be awarded for the provision of landscaping for an Infill or Commercial Retrofit Use Pattern where not more than 4,300 square feet of impervious surface is added.

(Ord. No. 97332 § 17; Ord. No. 97602 § 3)

(e) Variances

The Director of Development Services may consider and administratively approve variances in situations where the applicant does not strictly comply with the requirements of this section but is

35-511(e) continued

willing to provide a comparable alternative. The Planning Commission is designated in accordance with section 118, paragraph 3, of the City Charter to consider all other variance

requests and to consider appeals from the decisions of the Director of Development Services. Appeals shall be in writing and must be submitted within thirty (30) days of the Director of Development Services' decision.

The Commission may grant variances upon finding from the evidence presented that the following conditions exist:

- (1) Strict compliance with the requirements of this section will unreasonably burden the use of the property and/or will result in substantial financial hardship or inequity to the applicant;
- (2) The circumstances supporting the granting of the variance are not the result of a hardship imposed or created by the owner; and
- (3) The intent and general purposes of this section are preserved.

The applicant shall provide all evidence necessary for the Director of Development Services and Planning Commission to make their determinations. A variance granted under the provisions of this section shall apply only to the specific building site and structures for which the variance was requested. A fee as specified in Exhibit C shall be required for each variance request from the Planning Commission.

Ord. No. 97602 § 4)

35-512 Streetscape Planting Standards**(a) Applicability****(1) Generally**

In addition to developments subject to the Landscaping Standards, above, the following shall be subject to the Streetscape Planting Standards as provided herein:

- A. all developments with five (5) or more parking spaces; and
- B. all developments requiring Subdivision review.

Streetscape Planting Standards shall not apply to any Street classification unless Street Trees are required by the Street Improvement Standards, § 35-506(d), above.

(2) Expansion

When a building or parking lot is enlarged, the requirements of this Section shall be applied incrementally such that landscaping shall be required in the same proportion that the enlarged building area or off-street parking area has to the existing development. For example, a ten percent (10%) increase requires ten percent (10%) of the required street trees, with a minimum of one (1) tree to be planted.

35-512(a) continued

(3) Waivers and Exemptions

Should existing site conditions and/or existing development of the property render the planting of Street Trees impracticable, the Applicant may submit a waiver or modification request in accordance with § 35-483 of this Chapter. Local streets within a residential subdivision which service residential lot driveways shall be exempt from the requirements of this Section.

(b) Minimum Requirements**(1) Options**

- A. Where no existing or proposed overhead utility lines exist, street trees shall be large trees (see Appendix E), planted within the twelve (12') foot planting strip and shall be located a minimum three (3') feet from the back of the curb (BOC). One (1) large Street Tree shall be required every fifty (50) feet or fraction thereof, measured as an average of the Street frontage along the particular Street. Irrigation shall be provided for planted Street Trees for a minimum of 3 years for establishment.
- B. If existing or proposed overhead utility lines exist along the right-of-way that are greater than 35 feet in height, then the trees shall be medium size (see Appendix E), planted within the twelve (12') foot plant strip and shall be located a minimum of three (3') feet from the back of curb. Medium trees shall be planted every thirty (30') feet. Irrigation shall be provided for planted Street Trees for a minimum of 3 years for establishment.
- C. If existing or proposed overhead utility lines exist along the right-of-way that are lower than 35 feet in height, then the tree shall be a small tree (see Appendix E), planted within the twelve (12') foot plant strip and shall be located a minimum of three (3') feet from the back of curb. Medium trees shall be planted every thirty (30') feet. Irrigation shall be provided for planted Street Trees for a minimum of 3 years for establishment.
- D. As an alternative to the Streetscaping requirement in the Rights-of-way, requirements may be met by planting large to medium trees within the median. Minimum median width for tree planting will be eighteen (18') feet. Where left turn lanes are provided, the minimum width will be eight (8') feet. One Medium Tree shall be planted every fifty (50') feet and shall be a minimum of six (6') feet from the BOC. Where left turn lanes and/or crossovers are provided, the planting shall begin 15 feet from the nose of the turning island. Preservation of existing trees and understory vegetation may be used to meet this requirement. Irrigation shall be provided.

- (2) In no instance for the Options established in subsection (b)(1)A, (b)(1)B, and (b)(1)C shall the distance between Street Trees exceed one hundred feet (100') on center. Street Trees shall be planted in an even, linear spacing. If shifts to the linear spacing not exceeding two (2') feet are required due to the location of existing infrastructure, development or required sight distance, these shifts may be approved by the Director of Development Services.

- (3) Preservation of existing trees to meet this requirement is not only permissible, but is recommended. A 15-foot existing vegetation buffer along the right-of-way line is required

35-512(b) continued

for this option. Waivers for spacing and alignment may be given in order for existing trees to meet the street tree requirement.

(Ord. No. 98697 § 1)

35-513 Tree Preservation

See § 35-523, below.

35-514 Fences and walls

- (a) No such fence or wall, or portion thereof, shall exceed one-hundred (100) horizontal feet in length unless one of the following architectural features visible from the paved surface of the street is provided as part of the fence:

A column or pillar; or

(2) Articulation of the surface plane wall by incorporating plane projections or recesses having a depth of at least one (1) foot and extending a horizontal distance not less than three (3) or more than twenty (20) feet.

- (b) The provisions of subsection A above shall not apply to a fence or wall constructed of brick, masonry, or iron fencing which consists of at least fifty percent (50%) open voids. The square footage of the fence shall be measured by taking the total square footage of an area defined by the length of the fence and its average height. The percent of open voids shall then be derived by dividing the total square footage of the open voids by the total square footage of the area calculated above, and multiplying this figure by one-hundred (100). The fence's framing (the vertical posts supporting the fence from the ground and no more than three (3) horizontal cross bars between the posts, or brick or stone pillars) shall not be included in the calculation of the total square footage, provided the framing posts and cross bars do not exceed a four (4) inch width and the posts are spaced at least eight (8) feet apart.

(c) Height limitation

- (1) No fence or wall, other than the wall of a permitted structure, shall be erected or altered in any front yard to exceed a height of four (4) feet with the fence or wall to be so constructed that vision will not be obscured above a height of three (3) feet. Except as provided in subsection (2), below, no fence or wall, other than the wall of a permitted structure, shall be erected or altered in any side or rear yard to exceed a height of six (6) feet. This subsection shall not apply to fences erected as required by Chapter 16, Article VII of this Code (Salvage Yards and Auto Dismantlers), or in § 35-510 of this Chapter.

- (2) Notwithstanding the provisions of subsection (1), above, a fence may be erected or altered up to a height of eight (8) feet where:

- A. The fence adjoins a Perimeter Street; or
- B. The ground floor elevation of the Principal Dwelling on an adjoining lot is at least four feet higher than the elevation at the adjoining lot line; or

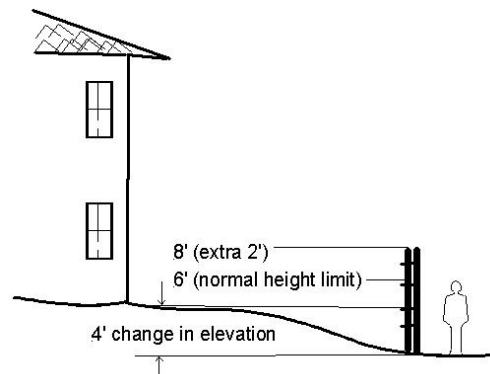


Figure 1: Additional height where home on adjacent lot is 4' higher (subsection (a)(2)B)

35-514(c) continued

- C. The fence abuts a side or rear lot line which adjoins a Collector Street or an Arterial Street (in which case Streetscape Planting shall be provided in accordance with § 35-512 of this Code) or
- D. The fence is a sound wall or fence required by TXDOT.
- E. The additional fence height is permitted by the City Council pursuant to a rezoning or specific use permit.
- F. The fence is located on a residential lot which abuts a C-3 or more intensive use that does not require a bufferyard.

(d) Industrial districts

In L, I-1 and I-2 districts, not fronting residential or commercial districts, and not located to adversely affect site distance at street and/or alley intersections, there shall be no limitation as to fence height.

(e) Uses adjoining certain residential zoning districts

- (1) All property zoned for nonresidential or multifamily residential uses after April 1, 1989, excluding property located within the Mixed Use District (MXD) or Infill Development Zone (IDZ), shall erect and maintain solid screen (opaque) fencing along the property boundaries adjacent to more restrictive residential zoning districts. However, the fencing shall be required only when the adjacent property is actually being used for residential purposes.
- (2) As a minimum, the fencing shall consist of wood materials and shall be six (6) feet in height except where a lower height is required by subsection (a) above. The fencing shall be required prior to obtaining the first certificate of occupancy for the newly zoned property.
- (3) With the zoning applicant's consent, the City Council may modify or exempt the residential protection fencing requirement or approve alternative screening measures, such as landscaped bufferyards, when considering a change in zoning.
- (4) The residential protection fencing requirement shall not apply in zoning cases initiated by the City of San Antonio unless specifically so stated in the ordinance approving the zoning.

(Ord. No. 98697 § 6)

(f) Apartments

Apartment complexes of twenty-five (25) or more units may erect fences higher than permitted in subsection (a) within the front yard Setback in accordance with the following criteria:

- (1) Fencing shall be limited to a maximum height of six (6) feet and shall be constructed of wrought iron or similar material with a minimum spacing of three (3) inches between bars.
- (2) Solid screen fencing or walls may be erected within the front yard Setback along side property lines if a three (3) foot landscape area is provided and maintained outside the fence or wall if it abuts a more restrictive zoning district. The landscape area shall contain a minimum of five (5) shrubs per twenty-five (25) linear feet and shall include ground cover.

35-514(f) continued

- (3) All requests for fencing in accordance with this subsection shall be reviewed by the fire and public works departments for accessibility of fire equipment and maintenance of clear vision areas.

(g) Residential Subdivisions**(1) Legislative findings and purpose**

The City Council finds that it is necessary for the public welfare to impose standards to improve and preserve the quality of fences in residential neighborhoods in order to avoid blighting influences on neighborhoods and public safety problems.

(2) Applicability

The requirements of this subsection (e) apply only to fences located along the perimeter of a tract or parcel subject to an application for subdivision approval and adjoining a Collector or Arterial Street.

(3) Standards

- A. A fence may be constructed of permanent material, such as wood, chain link, stone, rock, concrete block, masonry brick, brick, decorative wrought iron or other material which are similar in durability.
- B. The following materials shall not be used for fencing subject to this subsection:
 - 1. Cast-off, secondhand, or other items not originally intended to be used for constructing or maintaining a fence.
 - 2. Plywood less than five-eighths inches thick, plywood not of a grade approved by the code enforcement manager, particle board, paper, and visqueen plastic, plastic tarp, or similar material.
 - 3. Barbed wire, razor wire, and other similar fencing materials capable of inflicting significant physical injury.
- C. A fence constructed of wooden boards shall include at least one of the following architectural or landscaping elements for every fifty (50) lineal feet:
 - 1. A wall or column extending at least twelve (12) inches vertically and six (6) inches horizontally from the remainder of the fence; or
 - 2. The fence shall be articulated by means of a recess or a projection extending not less than twelve (12) inches horizontally from the remainder of the fence; or
 - 3. Climbing vines, shrubs or trees shall be planted along the base of that portion of the wall or fence that fronts a public street. The remaining setback area between the fence and property line shall be landscaped with grass or other low ground cover. All plants shall be irrigated and maintained consistent with the provisions of § 35-511 of this Article. Only living vegetation may be used to meet these landscaping requirements.

35-514(g) continued

- D. All fences shall be maintained by a homeowners association established consistent with the requirements of § 35-503(f)(2), above, so as not to create a hazard, public nuisance or blight in the surrounding neighborhood.

(Ord. No. 98697 § 6)

Division 4 Lot Layout, Height, and Density/Intensity Standards

35-515 Lot Layout Regulations

This Section provides for blocks which provide a pedestrian scale, offer alternative paths for vehicular traffic, and which accommodate on-Street parking. Standards are provided to ensure that lots have adequate access and conform to the zoning provisions of this Chapter. The City finds and determines that long blocks lined with homes and other buildings reduce Street connectivity and impair the efficiency of public and safety services, while increasing distances between residences and non-residential destinations or public gathering places. Exceptions to these standards are made for non-urban districts and zoning districts (such as RP and RE) and districts which require greater flexibility in order to encourage economic development (such as I-1 and I-2).

(a) Buildings to be on a lot

Except as permitted in the planned unit development district, every building shall be located on a lot. In the RP and Residential Zoning districts, no more than one (1) principal building may erected on a lot unless otherwise permitted in this chapter.

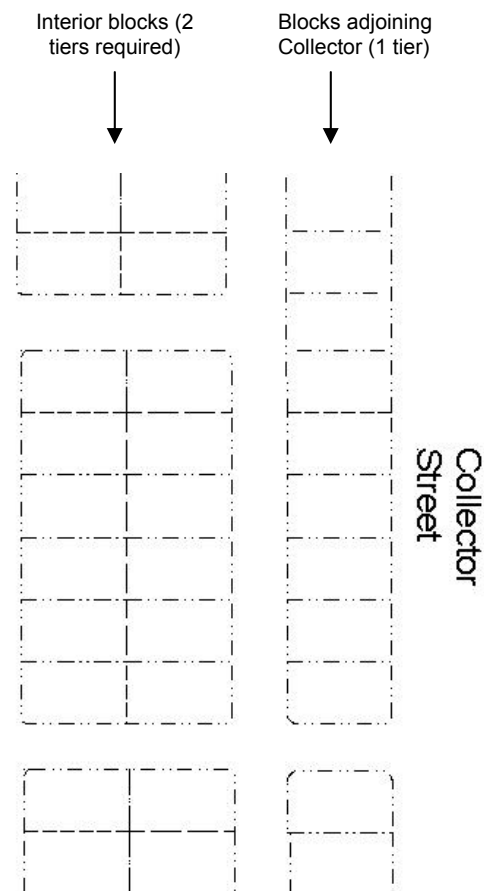
(b) Blocks

1. Lots To Be Contiguous

Lots shall be arranged in a contiguous pattern within blocks, or adjoining a cul-de-sac. For minor subdivisions, all lots shall be contiguous, and any new lots subdivided from a tract which has been previously subdivided shall adjoin the existing lots.

2. Block Width

Blocks to the interior of the subdivision shall have sufficient width to provide for two (2) tiers of lots. One (1) tier of required block width shall be permitted in blocks adjacent to Collector or Arterial Streets or waterways. Not more than two (2) tiers of lots shall be provided for any block. The provisions of this subsection do not apply to flag lots permitted by subsection (h), below.



35-515(a) continued

3. Length & Perimeter

The length of blocks within a subdivision or site plan shall be in accordance with 35-506 (t) and shall be in accordance with the following:

- A. If the anticipated traffic volume at the midpoint of the proposed Street is greater than or equal to one-thousand (1,000) vehicles per day and any of the following conditions apply, then the Street length shall not exceed seven-hundred (700) feet: (A) the Street intersects an arterial roadway, or (B) the Street serves as an entrance Street to the proposed neighborhood, or (C) the Street provides an opportunity for traffic to pass from a Street of a higher classification to another Street Link, or (D) the Street width is greater than or equal to 40 feet.
- B. If the anticipated traffic volume at the midpoint of the Street is less than or equal to 500 vehicles per day, then the Street length shall not exceed twelve-hundred (1200) feet.
- C. If the anticipated traffic volume at the midpoint of the Street is greater than 500 vehicles per day, then the Street length shall not exceed nine-hundred (900) feet.
- D. For the TND Use Pattern, no block shall exceed seven-hundred (700) feet in length without an alley or pedestrian pathway providing through access to another Street or alley.
- E. Maximum street lengths may be exceeded in accordance with Section 35-506(t) of this Chapter.

(c) Lots

1. Compliance with Zoning District Regulations

For proposed subdivisions within the incorporated area of the City, the size, width, depth, shape, and orientation of lots shall comply with the applicable zoning district regulations.

2. Factors governing dimensions

The size, width, depth, shape, and orientation of lots shall:

- Provide adequate building sites suitable to the special needs of the type of use contemplated.
- Accommodate lots of the size and dimensions required by Articles 2 and 3 of this chapter.
- Provide for convenient access, circulation, control and safety of Street traffic.
- Give due regard to the limitations and opportunities of topography.

(3) Minimum Lot Size in City Limits

Within the incorporated areas of the City, minimum lot size shall conform to the requirements of Article 3, § 35-310.

35-515(c) continued

(4) Frontage

All lots shall front on a public or private Street and shall have a minimum frontage width as indicated in § 353-310. On irregular shaped lots, a minimum Street frontage of fifteen (15) feet shall be required. Residential lots shall not front on a Collector Street, Arterial Street, or Parkway. An "irregular shaped lot" includes any lot located on a cul-de-sac or adjoining a curved section of a roadway with a centerline radius of less than two hundred (200) feet.

(d) Driveways

Restrictions on driveway areas are designed to avoid the domination of front yards by large expanses of impervious surfaces, which deaden the Streetscape and discourage pedestrian activity. Reducing the width of driveways can reduce total site imperviousness. Some techniques that can be used include:

- (1) Driveways and other impervious surfaces shall not comprise more than the percentage of the front yard as specified in Column (B) for the use patterns or zoning districts designated in Column (A). Driveway entrances shall not comprise more than the percentage of the front lot line as designated in Column (B). Parking may be provided in the rear yard, and access may be provided through alleys, where the front yard is insufficient to accommodate a driveway.

Table 515-1

(A) Zoning District or Use Pattern	(B) Maximum Percent of Front Yard	
TND, TOD, MXD, D, IDZ	30%	
R-6, RM-6, R-5, RM-5, R-4, RM-4, MF-25, MF-33, MF-40, MF-50, NC	50%	

- (2) In order to reduce impervious surfaces, shared driveways shall be permitted in any zoning district classification. In order to reduce runoff and increase stormwater travel times, alternative materials for driveway surfaces, such as pervious pavers or gravel, shall be permitted in any Residential Zoning District.
- (3) Table 515-1 shall not apply to irregular shaped lots as defined by Section 35-516 (I) of this Chapter.

(e) Zero lot line subdivisions**(1) Maintenance easement**

For zero lot line subdivisions, a minimum five (5) foot wide maintenance easement shall be provided through deed restrictions on the lot adjacent to the zero lot line. This easement shall be kept free of permanent obstructions such as tool sheds or fences without a gate. When filing an application for a building permit for a zero lot line development, the subdivider shall provide the City with two (2) copies of deed restrictions establishing the maintenance easements. One (1) copy of these deed restrictions shall be recorded by the applicant prior to issuance of the building permit. Along with the required building permit filing fees, an additional fee shall be provided by the subdivider to cover the recording costs of these deed restrictions.

35-515(e) continued

(2) Plat annotation

The following notation shall appear on the plat:

"_____ foot wide maintenance easements are established within the lots adjacent to all nonattached zero lot lines. Such easements shall extend for the depth of the lot and are included in the deed restrictions for all affected properties."

(Ord. No. 98697 § 6)

(f) Townhouse subdivisions

For townhouse subdivisions, adequate provision shall be made by the subdivider for common ownership and maintenance of community facilities such as recreation and open space, parking, access and similar common use areas. Such open and service areas shall be described and so indicated on the subdivision plat. The description "townhouse subdivision" shall be prominently indicated on the subdivision plat. Also the plat shall include a statement designating all lots in the subdivision to be limited to townhouse use. The subdivider shall also furnish the City two (2) copies of deed restrictions limiting the property to townhouse use and providing disposition and maintenance covenants on all open space or other common ownership areas. Such restrictions shall be recorded by the Applicant at the time of plat recordation. Along with the required plat filing fees, an additional fee shall be provided by the subdivider to cover county recording costs of such restrictive covenants.

(Ord. No. 98697 § 6)

(g) Two-family dwelling (duplex) lots

A lot upon which there is located two (2) attached dwelling units may be subdivided or resubdivided through the common wall into separate fee simple lots for each dwelling unit subject to the following requirements. The two-family dwelling or duplex lot shall be vacated and replatted. Each single-family lot resulting from the subdivision shall have a minimum lot area of four thousand (4,000) square feet and shall be at least forty (40) feet wide except in the case of a planned unit development or planned residential development. Separate utility meters shall be provided to each newly created single-family lot. Separate water and wastewater service lines shall be provided to each newly created lot and shall not traverse any other lot. Where common gas and electrical lines are provided to two (2) single-family lots, easements approved by City Public Service shall be provided. Walls and floors separating dwelling units in the same building shall not be less than one-hour resistive construction.

(Ord. No. 98697 § 6)

(h) Flag Lots

- (1) Not more than the following number of flag lots may be authorized to allow for the more efficient use of irregularly shaped parcels of land, or where the integrated nature of multiple buildings on a site dictates the need for such lots. Flag lots may be used to better use irregularly shaped properties or sites with physical limitations. Flag lots shall not be permitted where they will increase the number of lots that take their access from collector or arterial Streets.

35-515(h) continued

Table 515-2

MAXIMUM NUMBER OF FLAG LOTS	
Size of Subdivision	Maximum Number or Percentage (%) of Flag Lots
10 or fewer lots	2 lots
11-50	20%
51 or more	20%

- (2) The minimum driveway width shall be nine (9) feet.
- (3) Notwithstanding the provisions above, access to not more than four (4) lots may be provided by a shared driveway.
- (4) The minimum frontage at the right-of-way line for any Flag Lot shall be equal to the minimum required driveway width plus 4 feet. The flag pole portion of the lot shall not be considered in determining the area of the lot.

(i) Clear vision area

See Transportation Standards, § 35-506.

(j) Transitional Standards

Transitional Buffer Lot standards apply to some lower density zoning districts within the incorporated areas of the City. See § 35-310(d) of this Chapter.

35-516 Setback and Frontage Regulations**(a) Front and side setbacks**

Front and side setbacks adjacent to Streets shall be shown on all plats as required by Article III of this chapter. A subdivider may elect to impose greater setbacks; however they must be enforced through restrictive covenants. The City shall only enforce the setbacks required by Article III.

(Ord. No. 98697 § 6)

(b) Side yard building line

The building line for an existing residence having a side yard of three (3) or more feet may be maintained on any addition to the residence, but in no instance shall the side yard be less than three (3) feet.

(c) Yards adjacent to rights-of-way and easements

On lots that abut a public alley, railroad right-of-way, or an utility/drainage right-of-way or easement which is not part of a platted lot, one-half of such alley, right-of-way or easement, up to a maximum of fifteen (15) feet, may be considered as part of the minimum required rear or side yard.

(d) Variation in front yard

In any block in which seventy (70) percent of the lots have front yards that are less than required by the existing zoning, construction on any remaining vacant lots is permitted to the average yard of the existing improved lots.

(e) Rear yards on irregular lots

For lots fronting on cul-de-sacs, eyebrows, or elbows, and other irregular shaped lots caused by Street design, a rear yard of fifteen (15) feet is permitted based on the mean horizontal distance of the principal structure from the rear lot line and provided no part of the structure is closer than ten (10) feet to the lot line. The mean horizontal distance shall be calculated by adding the products of the width of each segment of the principal structure multiplied by its average distance from the property line and then dividing this sum by the total width of the structure.

(f) Dwelling on small lot

A platted lot within a residential district which contains less than the minimum area for the district may be used for a single family dwelling provided that the lot is held in separate and different ownership from any immediately adjoining lot, has a minimum area of three thousand five hundred (3,500) square feet, and has a minimum Street frontage of twenty (20) feet.

(g) Garages

There shall be a minimum of twenty (20) feet between the back of a sidewalk or the front property line and a front entry garage or carport.

(h) Swimming pools.

Swimming pools are prohibited within the front setback of all districts or within a platted or recorded utility or drainage easement. Pools which are excavated to a depth greater than three (3) feet below ground shall be located a minimum distance of five (5) feet from the side and rear lot lines.

(i) Reversed corner lots.

On reversed corner lots in all single family residential zoning districts within the City and single family subdivisions in the City's ETJ except Planned Unit Developments (PUDs), the side setback adjacent to the Street shall be at least equal to the front setback required for the lot to the rear.

(Ord. No. 95573 § 2, Amendment "C")

(j) Projecting architectural features.

Every part of a required yard shall be open and unobstructed from the ground to the sky except for permitted accessory structures and the ordinary projection of sills, belt courses, cornices, buttresses, eaves, and similar architectural features, provided that such projections shall extend neither more than five (5) feet into any required yard nor closer than three (3) feet to any property line.

(k) Reduction of lot size by governmental action.

Where the owner of a legally platted lot or his successor in title thereto has his lot reduced in size as a result of governmental action and thereafter does not own sufficient land to enable him to conform to the dimensional requirements of this chapter, such lot may be used as a building site for a single-family residence or other nonresidential uses permitted in the district in which the lot is located, provided that:

- (1) In those cases where the lot area or mean lot width is reduced by governmental action not more than twenty (20) percent below the minimum specified in this chapter, the Director of Development Services shall issue a building permit or certificate of occupancy.
- (2) In those cases where a vacant lot area or mean lot width is reduced by governmental action by more than twenty (20) percent, the Director of Development Services may approve as a building site such dimension as shall conform as closely as possible to the required dimensions of this chapter provided that the combined area of the main building and its accessory buildings shall not cover more than forty (40) percent of the lot area remaining after governmental action.
- (3) In those cases where a structure is located on a legally platted lot and the existing yards are reduced by governmental action below the dimensional requirements specified in this chapter, the Director of Development Services shall issue a building permit or certificate of occupancy for alterations to and use of the existing structure if said structure and lot conformed to the required dimensional requirements prior to the lot reduction by governmental action.

(Ord. N0. 98697 § 4)

(l) Setbacks Adjacent To High Pressure Fuel Lines, Railroads, Or Thoroughfares

A twenty-five (25) foot setback shall be shown on all lots adjacent to high pressure oil, gas or gasoline lines. The setback shall be measured at right angles from the center of the fuel line.

(m) Utility lines.

Building setbacks adjacent to overhead utility lines shall comply with the provisions of § 35-506 of this Article.

(n) Corner lots

Corner lots shall have sufficient width to provide appropriate building setback from and orientation to both Streets as required by Article III of this chapter.

35-517 Building Height Regulations**(a) Generally**

Building Height shall conform to the requirements of § 35-310, Dimensional Matrix.

(b) Measurement

Building Height shall be measured as provided in the Uniform Building Code.

(c) Height exceptions

The height limits for the various districts do not apply to church spires, belfries, cupolas, or domes not used for human habitation, nor to chimneys, ventilators, skylights, parapet walls, cornices, solar energy systems, or necessary mechanical appurtenances usually located on the roof level, provided that such features are limited to the height necessary for their proper functioning and do not exceed the limitations of the airport hazard zoning regulations.

(d) Setbacks for Height Increases

- (1) Any portion of a structure in any zoning district may be erected to exceed the height limit established in § 35-310.01, Table 310-1, provided that such portion is located back from the side and rear setback lines one (1) foot for each two (2) foot of height in excess of the height limit prescribed in such section or as prescribed in subsections (2) and (3), below (hereinafter the "threshold height"), and further provided the height does not exceed the limitations of the airport hazard zoning regulations. Distance credits shall be allowed for space occupied by structures of conforming height extending from the setback lines, except as specified in Table 310-1(k).
- (2) The provisions of subsection (1), above, shall not apply to an "NC," "C-1," "C-2," or "O-1" zoning district abutting or within one-hundred (100) feet, measured in a straight line, of a platted subdivision zoned "RE" or "R-20" as of the effective date of this Chapter.

35-518 to 35-520 Reserved

Division 5 Natural Resource Protection

This Section implements the following provisions of the Master Plan:

- *Natural Resources, Policy 2c: Revise the Unified Development Code to address the protection of natural resources and compliance with environmental regulations.*
- *Natural Resources, Goal 3 Achieve a sustainable balance between the conservation, use and development of San Antonio's natural resources.*
- *Urban Design, Policy 1b: Create and adopt urban design guidelines and standards which specifically encourage distinctive physiographic, natural, and scenic features.*

35-521 Edwards Aquifer Recharge Protection

See Chapter 34, Article VI, Division 6 of the City Code.

(a) Abrogation and greater restrictions

This division is not intended to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where the language of this division conflicts with language used elsewhere in this code, that which imposes the more stringent restrictions shall prevail.

(Ord. No. 96564 § 2)

(b) Purpose

The Edwards Recharge Zone Overlay District (ERZD) has been established for locations where the Edwards and associated limestone formations come to the surface to provide a recharge area for the underground water supply contained to provide a recharge area for the underground water supply contained within these formations. The recharge area also can provide an entrance to the underground water supply for contaminated water run-off from uses on the recharge zone as well as from the related sensitive area. Thus this recharge zone district is designed to not allow land uses that would produce toxic, corrosive, polluted, poisonous, radioactive, unpalatable, or otherwise dangerous substances injurious to the public health or which could otherwise adversely affect the water supply, and thereby minimizing the risk of potential occurrences wherein such substances could enter the water reservoir. Land uses permitted are those not having operations, production, or storage of hazardous materials that could contribute contaminants to the water supply. Additional land uses are permitted with appropriate restrictions, which will protect against the spread of contaminants due to the operations.

(Ord. No. 96564 § 2)

(c) Boundaries

The limits of the Edwards Recharge Zone are described on United States Geological Survey Quadrangle Maps, Being copies of the official maps in the offices of the Texas Natural Resource Conservation Commission (TNRCC), and are defined in the Texas Administrative Code, 31 TAC 213. If the limits of the ERZD cannot be accurately determined, then the Zoning Board of Adjustments shall interpret the district boundaries after obtaining such geologic information as is necessary from the San Antonio Water System, the TNRCC, the United States Geological Survey (USGS) or other properly designated agency.

(Ord. No. 96564 § 2)

(d) Zoning Classification

(1) Overlay district. The Edwards Recharge Zone Overlay District is designated as an overlay to the regular zoning classifications. Property located within this overlay district must also be designated as being within one of the regular zoning classifications. Authorized uses must be permitted in both the regular zoning classification and the overlay district.

(2) Zoning designation. The zoning designation of property located within the Edwards Recharge Zone Overlay District shall consist of the regular zone symbol and the overlay district symbol as a suffix. For example, if a parcel is zoned "MF-33" and is also located within the Edwards Recharge Zone Overlay District, the zoning designation of the property would be "MF-33"(ERZD). In effect, the designation of property as being within the Edwards Recharge Zone Overlay District places such property in a new zoning district classification and all procedures and requirements for zoning and rezoning must be followed.

(Ord. No. 96564 § 2)

(e) Uses permitted within the ERZD

Uses permitted by right and with special City Council approval are specified in Division 8 of the article, Permitted Uses. It shall be unlawful for any person to make use of any property located within the Edwards Recharge Zone District, except in accordance with such tables of permitted uses.

(Ord. No. 96564 § 2)

(f) Site Investigation Report

(1) The staff recommendation on all zoning/rezoning cases within the ERZD shall include a report from the San Antonio Water System Resource Protection & Compliance Department. The report shall contain a background description to include a discussion of the development, surrounding uses, geologic factors, on-site point and non-point pollution sources, sewer lines, proposed pollution abatement structures, and whether a water pollution abatement plan has been submitted.

(2) The report shall also contain a summation of facts and implications on the recharge zone; recommendation on zoning, pollution abatement plan needs, and monitoring requirements; and maps of the development and surrounding developments.

(Ord. No. 96564 § 2)

(g) Water Pollution Abatement Plan

As a condition of all zonings/rezonings within the ERZD, a water pollution abatement plan approved by the TNRCC shall be required for all regulated development as established and defined by Texas Administrative Code, 31 TAC 213, prior to the issuance of a building permit and/or certificate of occupancy.

(Ord. No. 96564 § 2)

(h) Underground Storage Tanks.

(1) All new and replacement underground storage tank systems within the ERZD shall comply with this section and the most current regulations in 31 TAC Chapter 334, Underground and Aboveground Storage Tanks, which is incorporated by reference as part of this chapter.

(2) New and replacement underground storage tanks installed within the ERZD shall require tertiary containment. The tertiary barrier shall consist of an artificially constructed material that is sufficiently thick and impermeable (at least 10–6 cm/sec or allow permeation at a rate of no more than 0.25 ounces per square foot per 24 hours for the regulated substance stored) and be able to direct a release to the monitoring point and permit its detection. The barrier material shall be compatible with the regulated substance stored so that a release from the underground storage tank system will not cause a deterioration of the barrier allowing a release to pass through undetected.

(3) All new and replacement underground storage tank systems shall include a monitoring and detection system able to detect a release between the underground storage tank and the tertiary barrier. The monitoring and release detection system must be capable of detecting a two-tenths (0.2) gallon per hour leak rate or a release of one hundred fifty (150) gallon within thirty (30) days such that the probability of detection shall be at least ninety five (95) percent and the probability of false alarm shall be no greater than five (5) percent.

(Ord. No. 96564 § 2)

(i) Underground Storage Tanks**(1) Generally**

The installation of any new underground storage tank systems within the Edwards Recharge Zone District is prohibited. Any existing underground storage tanks that require additional upgrades, including replacement of existing underground storage tanks, must meet the current Unified Development Code Standards.

(2) State Regulations

All replacement underground storage tank systems within the ERZD shall comply with this section and the most current regulations in 31 TAC Chapter 334, Underground and Aboveground Storage Tanks, which are incorporated by reference as part of this chapter. All new and replacement underground storage tank systems within the Edwards Aquifer Transition zone shall comply with this section and the most current regulations in 31 TAC Chapter 334, Underground and Aboveground Storage Tanks, and 31 TAC 213, Edwards Aquifer, which is incorporated by reference in this chapter.

(3) Tertiary Containment

Replacement underground storage tanks installed within the ERZD shall require tertiary containment. New and replacement underground storage tank systems installed within the Edwards Aquifer Transition Zone shall require tertiary protection. The tertiary barrier shall consist of an artificially constructed material that is sufficiently thick and impermeable (at least 10-6 cm/sec or allow permeation at a rate of no more than 0.25 ounces per square foot per twenty-four (24) hours for the regulated substance stored) and be able to direct a release to the monitoring substance stored so that a release from the underground storage tank system will not cause a deterioration of the barrier allowing a release to pass through undetected.

35-521(i) continued**(4) Monitoring System**

Replacement underground storage tank systems shall include a monitoring and detection system able to detect a release between the underground storage tank and the tertiary barrier. The monitoring and release detection system must be capable of detection a two-tenths (0.2) gallon per hour leak rate or a release of one hundred fifty (150) gallons within thirty (30) days such that the probability of detection shall be at least ninety-five (95) percent and the probability of false alarm shall be no greater than five (5) percent.

(5) Single Wall Underground Storage Tank Systems Within ERZD

Single wall underground storage tank systems within the Edwards Recharge Zone District are prohibited. All existing single wall underground storage tank systems within the Edwards Transition Zone, installed prior July 2, 1986 and in conformance with all the USEPA December 22, 1998 update requirements shall be removed and upgraded to current Unified Development Code standards by the date of December 22, 2003.

(6) Fee

A fee specified in Exhibit C shall be required by the San Antonio Water System for Underground Storage Tanks (UST) located on the Edwards Recharge Zone District and the Edwards Transition Zone to ensure compliance with Ordinance 81147 and all requirements of Chapter 34 of the City Code regulating underground storage tanks over the Edwards Recharge Zone and Transition Zone. The fees include an initial permit fee (per site), an annual inspection fee (per site), and beginning in 1998, a renewal fee every three (3) years (per tank).

35-522 *Floodplain Development Standards (Moved to Appendix F)***35-523 *Tree Preservation***

While allowing the reasonable improvement of land within the city and city's ETJ, it is stated public policy of the city to maintain, to the greatest extent possible, existing trees within the city and the ETJ, and to add to the tree population within the city and the ETJ. The planting of additional trees and preservation of existing trees in the city and the ETJ is intended to accomplish, where possible, the following objectives:

- *To preserve trees as an important public resource enhancing the quality of life and the general welfare of the city and enhancing its unique character and physical, historical and aesthetic environment.*
- *To encourage the preservation of trees for the enjoyment of future generations.*
- *To encourage the preservation of trees to provide health benefits by the cleansing and cooling of the air and contributing to psychological wellness.*
- *To encourage the preservation of trees to provide environmental elements by adding value to property, and reduction of energy costs through passive solar design utilizing trees.*
- *To encourage the preservation of trees to provide environmental elements necessary to reduce the amount of pollutants entering streams and to provide elements crucial to establishment of the local ecosystem.*
- *To provide tree preservation requirements and incentives to exceed those requirements that encourage the maximum preservation of trees.*
- *To promote and protect the health, safety and welfare of the public by creating an urban environment that is aesthetically pleasing and that promotes economic development through an enhanced quality of life.*

This Section implements the following provisions of the Master Plan:

Neighborhoods, Policy 3c: Continue to implement the tree preservation ordinance and strengthen as needed.

(Ord. No. 97332 § 2)

(a) *Applicability****(1) Generally***

- A. The regulations contained in this division shall apply to any private property located within the city limits of the city and the ETJ of the city that is not the subject of a Permit as of the effective date of this provision.
- B. The regulations contained in this division shall apply to all public property held by or for the benefit of the city or any agency, board or commission thereof in accordance with the provisions of subsection (o) of this division.

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- C. The regulations contained in this division shall regulate all activities that result or may result in the removal of Significant or Heritage trees as defined herein. Said activities include any of the following conducted on property to which the division applies:
1. Industrial, commercial, office, multifamily, residential and institutional development, including all new construction and any additions that increase the total floor area of a structure by more than two thousand five hundred (2,500) square feet.
 2. Construction of a new parking lot larger than two thousand five hundred (2,500) square feet or expansion of an existing parking lot by more two thousand five hundred (2,500) square feet.
 3. Any grading, filling or clearing of land.
 4. Any clear, selective or individual cutting or removal of any Significant or Heritage tree as defined.
 5. Chemical or biological treatment of trees that may result in the death or destruction of any Significant or Heritage tree as defined.
 6. Trenching or excavation that may damage or destroy any Significant or Heritage tree as defined.
- D. The regulations in this Section shall apply to any projects receiving any federal, state, and/or local financial assistance.

(2) Activities Exempt

The regulations in this division shall not apply to the clearing of understory necessary to perform boundary surveying of real property or to conduct tree surveys or inventories. Clearing for surveying may not exceed a width of two (2) feet for general survey (i.e. of easement boundary, etc.) and eight (8) feet for survey of property boundary lines. Except for surveys done in connection with residential development, no tree ten (10) inches or larger may be removed in any manner during such boundary or general surveying.

(3) Categories of Development Exempt

The provisions of this Section shall not apply to any Conservation Subdivision.

(4) Trees Exempt

This division shall not apply to:

- A. Any Significant or Heritage tree determined to be diseased, dying or dead, by the City Arborist.
- B. Any Significant or Heritage tree determined to be causing a danger or be in hazardous condition as a result of a natural event such as tornado, storm, flood or other act of God that endangers the public health, welfare or safety and requires immediate removal.

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- C. Trees located on property on which construction of single-family, two-family or three-family residential dwelling units has been completed.
- D. Trees located in the clear vision area, as defined in the Street Improvement Standards.
- E. Trees preventing the opening of reasonable and necessary vehicular traffic lanes in a street or alley.

The provisions contained in this section shall control in the event and to the extent they may conflict with other provisions contained in this Chapter that do not related to health and safety.

(Ord. No. 97332 § 2)

(b) Administration

The provisions of this section shall be implemented by a City Arborist. under the direction of the Director of Development Services. The City Arborist shall oversee regulation of the maintenance and removal of Significant or Heritage trees and shall enforce and administer the provisions of this section.

The City Arborist shall work closely with all city departments and governmental entities and licensees, and franchisees thereof in order to promote and ensure the maximum protection of trees by the implementation and administration of this section. City departments with which the City Arborist is authorized to interact pursuant to subsection (o) of this section include, but are not limited to the following:

- A. Planning department. Coordination of tree preservation in the review of master development plans (for phase development) and any grading, fillings and spoil activities when applicable.
- B. Development services department. Coordinate and maximize the preservation of trees through the implementation of the city landscape and streetscape standards and through the building permit application and approval process contained in this chapter.
- C. Public works department. Maximize the preservation of trees during public works projects for public improvements such as, but not limited to utility installation, street construction and maintenance, drainage construction and maintenance, grading, filling, placement of soil, etc. and coordinate any projects that modify natural drainage areas in a way that negatively affects trees on private property or public property.
- D. San Antonio Water System. Maximize the preservation of trees during capital improvement projects. The arborist shall review any policies related to trees.
- E. City Public Service Board. Maximize the preservation of trees during capital improvement projects. The arborist shall review any policies related to trees.
- F. Parks and recreation. Maximize the preservation of trees during capital improvement projects.

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- G. Any other entities which may require easements or rights-of-way shall maximize the preservation of trees during the project. The arborist shall review any policies related to trees.

(Ord. No. 97332 § 2; Ord. No. 98697 § 6)

(c) Violation, enforcement and penalties

The provisions of this Section shall be enforced as provided in Article 4, Section 35-493 of this Chapter.

(Ord. No. 97332 § 2)

(d) Protected Tree Designations

The Significant or Heritage tree designations establish a threshold trunk size, measured in diameter at breast height ("DBH"), for various tree species for purposes of applying the requirements of this ordinance. A Significant or Heritage tree is defined by DBH as set forth below. Significant trees of less than six (6) inches may be omitted from the Tree Survey and preserved or mitigated based on a numerical count.

(1) Significant Trees

A Significant tree means a tree of six (6) inches or greater DBH for all tree species except for the following species where a significant tree means a tree with two (2) inches or greater DBH:

1. Persimmon
2. Redbud
3. Mountain Laurel
4. Condalia
5. Possum Haw (in floodplain only)
6. Crabapple (in floodplain only)

(2) Heritage Trees

A Heritage tree means a tree of twenty-four (24) inches or greater DBH for all tree species except for the following species where a Heritage tree means a tree with eight (8) inches or greater DBH:

1. Persimmon
2. Redbud
3. Mountain Laurel
4. Condalia
5. Possum Haw (in floodplain only)
- Crabapple (in floodplain only)

(Ord. No. 97332 § 2)

(e) Minimum tree preservation requirements**(1) Generally**

Table 523-1 establishes the minimum percentage of all diameter inches or percent tree canopy of Significant or Heritage trees that must be preserved or mitigated. For single family dwellings, developers and builders may elect to preserve trees at the platting or permitting stage; if a developer or builder elects to preserve at the platting stage, this method must be used throughout completion of the project.

Table 523-2		
	Single-family Dwellings	Multi-family and Non-residential uses
Significant Trees	35% within each platted lot, excluding street right of way and easements. Plus each builder on a single family dwelling lot shall also be required to plant two, 2" caliper new trees, which trees shall generally be native, large canopy trees.	40% within the entire site excluding the street rights-of-way and easements.
Significant Trees under 6" DBH	35% within each planted lot, excluding the street right of way and easements or 35% of the number of total count of all such trees.	40% within the entire site, excluding street right of way and easements or 40% of the number of total count of all such trees.
Heritage Trees	100% within each platted lot	100% within the entire site.
100 year flood plain(s)	80% of all the trees within the flood plain, which shall not apply toward preservation requirements on the remainder of the lot.	80% of the trees within the flood plain, which shall not apply toward preservation requirements on the remainder of the site.
Mitigation Maximum	Up to 90% of Significant and Heritage trees may be mitigated rather than preserved.	Up to 90% of significant and Heritage trees may be mitigated rather than preserved.

(2) Calculation of Preservation Ratios

All percentages relating to preservation stated within this section shall be based on the initial tree survey. Any subsequent redevelopment of property must minimally preserve the applicable percentage of the total diameter inches of protected trees as indicated by the initial tree survey.

(3) Tree Stand Delineation Alternative

As an alternative to a tree survey, a tree stand delineation may be used to meet the preservation requirements (see submittal requirements Section 35-B125). The amount of tree area(s) required

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to be preserved is twenty-five (25) percent. Within the tree save area, the existing understory must be included/preserved to meet the requirements of this elective option.

(4) Mitigation

Protected trees that are required to be preserved are to be mitigated at the ratio described in Table 523-2.

(5) Diversity and Desirability

As the particular site conditions warrant, the applicant shall make a reasonable effort to preserve a diversity of species of trees as determined by the City Arborist.

(6) Site Design

The location of all proposed buildings and improvements shall be oriented by the applicant, to the extent the applicant determines possible, in a manner which allows for preserving of the greatest number of trees and in doing so the applicant is encouraged to design by taking into consideration the site's limitations and assets. Trees located within the existing right-of-way shall not be counted as it pertains to the minimum preservation percentage. Applicants are encouraged to preserve trees to meet the landscape and streetscape standards which could reduce or eliminate the irrigation requirements.

(7) Rights of Way

Unless otherwise allowed by this division, trees of a protected size or larger located within existing rights-of-way or easements may be damaged, destroyed, or removed only if prior approval is granted by the City Arborist..

(8) Trees on Public Property

The city shall have the right to maintain trees, plants, and shrubs within the lines of all public property as may be necessary to ensure the safety, protect facilities and improvements, and maintain the health and aesthetics of such public grounds. In order to achieve the above, the city or its municipal utility entities may remove or cause or order to be removed any tree which is located on public property and determined to be in conflict with a public purpose or to be a public hazard through coordination with the City Arborist.

Unless specifically authorized by the city, no person shall knowingly cut, carve, transplant, or remove any tree; attach any rope, wire, nails, advertising posters, or other contrivances to any tree; or allow any substance, solid, liquid, gas, or fire to injure any tree or portion thereof on public property.

(9) Historic Trees

In order to protect historic trees, as defined, the City Arborist. shall defer the approval of tree preservation plans to review by the Director of Planning who shall seek the advice of the Historic Design and Review Commission in instances where a historic tree is proposed to be removed. The Commission may recommend additional replacement standards, recommend a cash payment to be deposited to the tree replacement fund to offset the cost of future tree planting on public property, or recommend that the application for permit and tree preservation plan be denied. Provided, however that no later than thirty (30) days after the final application for removal of the historic tree was received, the Director of Development services shall advise the applicant

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by certified mail, return requested, or hand delivery of his decision. The final application will be deemed approved if not acted upon by the Director of Planning before the expiration of the thirty-day time period herein established. Such action may be appealed pursuant to Section 35-489 of this Chapter.

(Ord. No. 97332 § 2; Ord. No. 97602 § 2; Ord. No. 98697 § 1 & 6)

(f) Mitigation/alternative mitigation methods

Significant or Heritage trees may be removed in excess of the minimum preservation requirement contained in subsection (e) provided the excess removal is properly mitigated.-

If mitigation is required to compensate for removing trees in excess of the number of diameter inches allowed to be removed within the surveyed area to be calculated for tree preservation under the minimum preservation requirements, the mitigation may be achieved in one of the ways prescribed in Table 523-3, below:

Table 523-2 Mitigation		
(A) Method	(B) Description	(C) Restrictions
1. Establishment and maintenance of new trees at the required ratio on-site	Significant 1:1 Heritage 3:1	No more than twenty-five (25) percent of the replacement trees shall be of the same species; for the purposes of mitigation, Heritage designation does not apply to Ashe Juniper.
2. Payment to the tree mitigation fund	See subsection (n) of this Section.	See subsection (n) of this Section.
3. Protection and Maintenance of smaller trees within Surveyed Area	Protection and maintenance of existing trees within the surveyed area that are smaller than the size requirements for a protected tree.	Such trees must be at least two and one-half (2 ½) inches DBH. See Column B ratios for diameter-inches required.
4. Protection and Maintenance of natural areas within the Surveyed Area	Protection and maintenance of existing natural areas, i.e., prairie, steep slope, etc.	Area(s) must contain desirable plants as determined by the City Arborist and/or by Texas Parks and Wildlife Dept.

In considering a mitigation method, the City Arborist may weigh the value of smaller trees, clumps of trees, and natural vegetation that could be retained to meet the requirements of this section, such as mitigation method above, or the amount of vegetation to be retained on the site and/or added according to a landscape plan to determine the extent additional trees may not be required. For these reasons, indiscriminate clearing of smaller trees and shrubs or understory is discouraged.

(Ord. No. 97332 § 2; Ord. No. 97602 § 2)

(g) 100 year Flood Plain(s)

Significant trees shall be preserved at eighty (80) percent preservation within the 100 year flood plains. Heritage trees shall be preserved at one hundred (100) percent preservation within the 100 year flood plains. The 100 year flood plain shall be determined by the Flood Plain Administrator. Such trees shall be mitigated as defined in Table 523-2. If trees are required to be removed by a governmental entity due to existing off site conditions, then mitigation shall not be required by the applicant. The City Arborist, the Director of Public Works, the Director of Development Services, and one representative from the Cibolo Creek watershed, the Leon Creek Coalition, the Salado Creek Foundation, the San Antonio River Oversight Committee, and the Land Heritage Institute (for the Medina River) shall agree on a standard for treatment of drainage ways, which standard shall be approved by the Urban Affairs Committee of City Council.

(Ord. No. 97332 § 2; Ord. No. 97602 § 2)

(h) Tree preservation incentives

An individual may apply for, and subject to verification, shall receive incentives for tree preservation as follows:

(1) Parking space reduction

Upon application and verification by the City Arborist, an individual shall be entitled to a reduction in the minimum parking requirements of § 35-526 of this Code to help meet the minimum tree preservation requirements. For the purpose of providing an incentive, the said minimum parking requirements of § 35-526 of this Code may be reduced by one (1) parking space for every four (4) diameter inches of trees that have been protected or mitigated on a site. The City Arborist shall issue a certificate to the appropriate city department(s) confirming that a reduction has been earned under this section. Up to fifteen (15) percent of the required spaces may be waived, however, a waiver in excess of fifteen (15) percent of the required spaces must be approved by the Director of Development Services or his designee, and no waiver may exceed thirty (30) percent of the required spaces. A waiver of up to fifty (50) percent of the minimum parking spaces required by Table 526-3 may be granted if the plan will result in the preservation of woodlands or significant stands of trees in a natural state as in Section 35-526. If used, the incentive provided by this subsection shall control over any other conflicting provision of this Code.

(2) Sidewalks

Where the Director of Development Services determines that preservation of trees warrants the elimination, reduction in width, or modification to the sidewalk and curb requirements in accordance with the Tree Preservation Standards, a waiver may be granted.

(3) Tree Cluster(s)

In order to emphasize the importance of preserving trees in a cluster during development, additional tree preservation credit will be given as follows:

A. Cluster(s) of three (3) or more trees less than ten (10) feet apart without existing understory will be calculated at 105% for each tree within the cluster with a minimum size of 2 ½ inch diameter.

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B. Cluster(s) of three (3) or more trees less than ten (10) feet apart with existing understory will be calculated at 115% for each tree within the cluster with a minimum size of 2 ½ inch diameter.

(4) Landscape credits

Landscape credits may be awarded as provided in § 35-511, above.

(5) Understory

The City Arborist may determine that the preservation of native understory plants together with trees grouped in significant stands may result in a reduction of new plantings needed to meet the landscape requirements and/or an increase of credit given for elective points and/or the elimination of an irrigation system requirement of Section 35-511. Emphasis is on the preservation of said significant stands and accompanying native understory plants and therefore, the smaller tree diameters may be counted one for one in terms of meeting the minimum tree preservation requirements. It is at the discretion of the City Arborist as to the maximum number of trees, less than the Significant tree size, that may be allowed to be used for obtaining additional landscape points under this incentive.

(6) Minimum Lot Size and Setbacks

The Board of Adjustment may waive the minimum lot size and setback requirements of the applicable zoning district for an individual lot or lots where the Applicant demonstrates the following:

- A. Compliance with the minimum lot size or setback requirement is needed to preserve a Significant Tree or Heritage Tree; and
- B. If the Tree Permit application is pursuant to a proposed subdivision plat, the average lot size of the proposed subdivision will equal or exceed that of the applicable zoning district; and
- C. The public purpose involved in protecting the tree exceeds the public purpose of complying with minimum lot size or setback requirements; and
- D. The resulting lot sizes or setbacks do not violate the Master Plan or the applicable Neighborhood Plan.

(7) State Certification in Lieu of Compliance

The City Arborist shall assist those who wish a site certified under the Texas Parks and Wildlife, Texas Wildscape Program in lieu of meeting city requirements in this division as long as twenty (20) percent of existing trees on site are preserved.

(Ord. No. 97332 § 2)

(i) Root Protection Zone**(1) Root Protection Zone**

A root protection zone must be established around the trunk of each tree preserved or mitigation tree. For multi-family and non-residential construction the root protection zone shall be an area defined by an average radius extending outward from the trunk of the tree a distance of one (1) linear foot for each inch (DBH). A minimum of 50% of the root protection zone area shall be preserved at natural grade, with natural groundcover. No cutting, filling, trenching, root disturbance, soil disturbance, or construction impacts shall occur closer to the trunk than one-half (1/2) the root protection zone radius. Filling shall be allowed to accomplish water conservation goals established by the City of San Antonio or by a public utility. Native understory vegetation within the root protection zone shall be preserved, however this requirement does not apply to root protection zone areas that have been landscaped using native, drought tolerant plants. The root protection zone may be shifted and clustered as long as there is no construction closer to the trunk than one-half (1/20) the root protection zone radius. The construction of sidewalks shall be allowed in the root protection zone, as long as excavation does not exceed three (3) inches.

The area contained within a root protection zone required under this subsection must be left in a pervious condition after construction and development are completed unless approved alternative construction methods are used. The arborist shall establish a written set of technical criteria on which such approval shall be based. During construction activity on the site, at least six-inch layer of a coarse mulch shall be placed and maintained over the root protection zone. The impervious cover may encroach within the root protection zone if said encroachment is approved by the City Arborist.

(2) Warranty

In lieu of establishing root protection zone(s) as prescribed in Section 35-523 (i) or adhering to alternate construction methods as approved by the City Arborist, a developer or property owner may choose to provide a Tree Preservation Warranty for multi-family and non-residential construction only. In the event a developer or property owner chooses to provide a Tree Preservation Warranty as provided for herein the owner of the Property must provide a Tree Preservation Warranty to the City Arborist, which shall obligate the then owner of the Property to replace any tree (or trees) reflected on the tree survey and which are the subject of the warranty. The term of the warranty shall be five (5) years from the date that a building permit is filed for building construction projects or five (5) five years from the date construction is commenced for infrastructure improvements related to development projects. Each tree that is covered by a Tree Preservation Warranty must be identified on a tree survey prepared in accordance with section 35-B123(c)(1) A and submitted with the Tree Preservation Warranty, If any tree required to be preserved and which is the subject of a Tree Preservation Warranty shall die during the term of the Tree Preservation Warranty, the tree shall be replaced in accordance with the mitigation provisions of Subsection 35-523(f). All replacement trees shall be planted in accordance with the standards set forth in section 35-523(l). The City may require such Owner to replace a tree (or trees) that has died at any time during the term of the Tree Preservation Warranty, and, if such Owner fails to replace the tree within 90 days of the city's written request to replace same, the city at its sole option may refuse to issue any new building permits, accept any development application, or accept any infrastructure improvements from such owner. Nothing in this subsection shall exclude any and all remedies otherwise provided by law.

The Tree Preservation Warranty shall be filed in the records of the Development Services Department of the City.

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The seller of property subject to a Tree Preservation Warranty shall provide a copy of the warranty and attached tree survey to prospective buyers.

(Ord. No. 97332 § 2; Ord. No. 97602 § 2)

(j) Tree protection during construction**(1) Generally**

It is the applicant's responsibility to insure that all parts of the tree preservation plan are transferred to each appropriate person concerned with the development project.

(2) Protection Barrier

Except for single family residential construction, a protection barrier shall be erected at the edge of the root protection zone for all trees, understory and/or natural areas to be preserved to meet the requirements of the Tree Preservation, Landscape and/or Streetscape standards. The barrier shall be in place before any site work is initiated and maintained throughout the construction process. However, on one side of the tree the protective barrier can be erected a minimum, distance of sixty (60) inches from the trunk(s) of individual Significant, Heritage or mitigation trees or islands of such trees and understory and maintained until construction is completed. This protective barrier may be comprised of snow fencing, vinyl construction fencing, chain link, geotextile material or other similar sturdy material. During construction, no excess soil, additional fill, equipment, liquids or construction debris shall be placed inside the protective barrier nor shall any soil be removed within the barrier.

(3) Grading

The proposed finished grade within the root protection zone of any tree to be preserved shall not be raised or lowered more than three (3) inches. Approved welling methods for tree preservation may be used within the root protection zone. Other welling and/or retaining methods may be used to protect and/or provide lateral support to the area outside the root protection zone.

(4) Branch/Root Pruning and Wounded Trees

All broken branches and exposed roots two (2) inches in diameter or greater of Significant, Heritage or mitigation, trees shall be cut cleanly. In the case of oak species, in order to prevent infection by oak wilt spores, wounds must be painted with an acceptable wound dressing within thirty (30) minutes.

(5) Equipment/Vehicle Storage and Parking Areas

Prior to construction or land development, the developer or builder shall establish designated parking areas for the parking and maintenance of all vehicles, trailers, construction equipment, and related items, as well as stockpile areas for the storage of construction supplies and materials. The location and dimensions of said designated areas shall be clearly identified on construction and site plans and at the construction site.

(6) Boring of Utilities

- A. For purposes of this subsection, "boring" means the practice of tunneling below the effective root system of a tree for the purpose of running underground utilities.

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- B. Boring is permitted, but not required, under protected trees where needed to provide underground utility access. The minimum length of the bore shall be the width of the tree's canopy. The minimum depth is twenty-four (24) inches.

(7) Tree Protection Details

Tree protection notes and details shall be included on subdivision plans, tree preservation plans and/or landscape plans. The applicant shall also include tree protection notes and details with the bid documents given to the contractor.

(Ord. No. 97332 § 2; Ord. No. 97602 § 2)

(k) General maintenance

Significant, Heritage, or mitigation trees must be maintained in a healthy condition at all times. The property owner is responsible for irrigating, fertilizing, pruning and other maintenance of all trees as needed. Except for residential development, mitigation trees that are planted on the property and that die within twelve (12) months of final inspection are subject to the mitigation requirements set forth in subsection (e) at a ratio of one (1) inch mitigation for every one (1) inch of a Significant, Heritage, or mitigation trees that dies. However, a Significant or Heritage or mitigation tree that dies from other than natural causes shall be mitigated at a ratio as defined in Table 523-2. Any tree that dies must be replaced with another living tree of the same category type or better within ninety (90) days after notification by the city. The building official may extend this time period up to an additional ninety (90) days due to weather considerations. If the plants have not been replaced after appropriate notification and/or extension, the property owner shall be in violation of this section. If a public utility disturbs trees, it shall make every reasonable effort to preserve the trees and return them to their prior location and condition after the utility work is completed. If nonetheless, trees die, replacement is not the responsibility of the property owner if the death or destruction of the trees is due to the action of a public utility.

(Ord. No. 97332 § 2; Ord. No. 97602 § 2; Ord. No. 98697§ 4)

(l) General planting standards

(1) Mitigation or replacement trees required by this section must have a minimum caliper of two and one-half (2 1/2) inches measured six (6) inches above grade at the time of installation and, shall be planted in a pervious area of at least one hundred and sixty-two (162) square feet per tree.

(2) No artificial plant materials may be used to satisfy the requirements of this section.

(3) For single family residential construction, the two trees required to be planted per residential lot shall be Class I trees, of two (2) inch caliper, and shall be a species that matures to a minimum height of thirty (30) feet (Appendix E) unless there is a conflict with overhead utilities where the trunk would be within twelve (12) feet of overhead utilities. In such incidences the tree will be from the small tree species as listed in Appendix E.

(4) Plant materials required by this section must comply with the following minimum size requirements at the time of installation.

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- A. In satisfying the requirements of this section, the use of mulch material shall be provided at the time of planting.
- B. Each replacement tree must be planted at least thirty (30) inches away from any impervious surface.
- C. Plant areas must be protected from vehicular traffic through the use of concrete curbs, wheel stops or other permanent barriers.

(5) Transplanting existing trees shall be considered an acceptable method for preserving a tree if:

- A. The tree is a Significant or Heritage tree; and
- B. The tree is transplanted on the same lot, parcel, or development site; and
- C. The applicant provides a feasibility report prepared by a Certified Arborist or Landscape Architect which describes the following:
 - 1. Digging method;
 - 2. Relocation sites;
 - 3. Method of transport;
 - 4. Time of year transplanting will take place;
 - 5. Storage methods (if any); and,
 - 6. Maintenance programs before, during, and after transplanting.
- D. The Applicant shall comply with the requirements of the feasibility report, which shall be considered a condition of the Tree Permit.

(Ord. No. 97332 § 2)

(m) Variance procedure**(1) Variances**

Variances to the terms and requirements of this division may be granted by the City Arborist where a literal enforcement of the provisions of this division will result in an unnecessary hardship. No variance may be granted unless:

- A. Such variance will not be contrary to public interest;
- B. Such variance will be in harmony with the spirit and purpose of this division;
- C. The variance will not substantially weaken the general purposes of this division or the regulations herein established for the protection of trees; and
- D. The variance granted is limited in scope of relief to only that which is necessary to relieve the hardship condition.

(2) Request for variance

A person who feels they qualify for a variance, under the conditions outlined in subsection (a) above, from the literal application of this division to their property may request a variance from such application of one (1) or more of the provisions of this division. All requests for variances shall be made in writing to the City Arborist, and shall include:

- A. The subject of the requested variance; and
- B. The justification for granting a variance.

(3) Burden

- A. The party requesting a variance has the burden of demonstrating that sufficient evidence exists for the granting of a variance to application of this division. The City Arborist shall consider and provide a written response to all such requests for variances as quickly as possible but not more than thirty (30) days from the date a valid request for variance is received. The response shall be served by certified mail, return receipt requested, or by hand delivery.
- B. *If granted.* If a variance is granted as requested, or with modification, the recipient of the variance may develop their property according to all applicable provisions of this division, to the extent such provisions have not been waived or modified by the variance.

(4) Appeal

Any person who properly requests a variance pursuant to this section and objects to the decision of the City Arborist which denies all or part of the relief requested may appeal such denial to the Director of Development Services or his designee by filing a request for appeal within ten (10) working days from the date notice of denial is received by the requesting party. All such appeals shall be made in writing to the office of the Director of Development Services and shall include all pertinent information which the person requesting the appeal wishes to be considered. The Director of Development Services may require additional information from or request a meeting with the person making the appeal. The written decision of the Director of Development Services, or authorized designee, on the appeal shall be rendered within fifteen (15) working days and shall be delivered to the appealing party by certified mail, return requested, or by hand delivery. If the Director of Development Services or authorized designee fails to render an opinion on the appeal within the fifteen-day period, the relief requested in the appeal shall be granted.

(5) Planning Commission

- A. If the Director of Development Services denies all or part of the relief requested in an appeal, the aggrieved party may appeal to Planning Commission by filing a notice of appeal with the office of the city clerk no later than the tenth working day following the party's receipt of the written decision of the Director of Development Services. A true and correct copy of the notice of final appeal must also be filed with the office of the Director of Development Services who upon receipt of such notice, shall immediately transfer copies of all documents and information relevant to the appeal to the executive secretary to the Planning Commission. The Executive Secretary of the Planning Commission shall schedule the hearing of the appeal at the earliest available regularly scheduled

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meeting of the Planning Commission which will allow compliance with the requirements of the Texas Open Meetings Act.

- B. A decision of the Planning Commission that is adverse to the applicant shall be appealable by the applicant to the City Council for final action by filing a notice of final appeal with the office of the city clerk no later than the tenth working day following the party's receipt of the written decision of the Planning Commission. The city clerk shall schedule the hearing of final appeal at the next available regularly scheduled meeting of the City Council which will allow compliance with the requirements of the Texas Open Meetings Act.
- C. Where this division requires either the city or applicant to respond, or take other action, within a specific number of days, such calculation shall begin on the first working day after the date of receipt of the information that necessitated response or action.

(Ord. No. 97332 § 2; Ord. No. 98697 § 6)

(n) Tree mitigation fund**(1) Fund Established**

The Director of Finance is hereby directed to establish a dedicated account to be entitled tree mitigation fund (hereinafter the "fund").

(2) Penalties

§ 35-493 of this Chapter provides for sections imposing civil penalties in addition to criminal penalties. Civil penalties collected pursuant to such section shall be recorded in the fund created pursuant to this section, unless expressly prohibited by law. Likewise, all funds received from the payment of mitigation fees pursuant to subsection (f) shall be recorded in the fund.

(3) Use of funds

The funds collected from civil penalties and mitigation fees in the fund shall be utilized to pay for the planting and maintenance of trees, the funding of tree preservation and planting programs to be administered by the development services department. The Development Services Director shall seek the advice of the Open Space Advisory Board in regard to the selection of projects to be funded. A portion of the fund may be used, on an annual basis, to fund activities directed towards educating the public on the importance of trees in the environment, ecological issues and pollution prevention.

(4) Funds to be kept separate

The balance within the fund shall be recorded and accounted for in a manner that distinguishes them from other general funds of the city and shall be disbursed in a manner consistent with the purposes for which this fund has been established. The balance of this fund shall not be transferred to the general fund at the end of each budget year, but rather, the balance remaining in the fund at the close of the city's fiscal year shall roll over and become the beginning balance for the next fiscal year.

(Ord. No. 97332 § 2; Ord. No. 98697 § 6)

(o) Public projects

Municipal and utility entities shall obtain a Tree Permit before any vegetation is removed or new construction activity takes place. Special attention will be given to the preservation of trees in public rights-of-way that are to help satisfy the objectives of the Streetscape Planting Standards of this Article (§ 35-512). The City Arborist shall approve an application for the reasonable removal of a protected tree in connection with construction, maintenance or repair of public facilities in or above a public street, alley, rights-of-way, easement or other public land.

(1) Generally

A minimum of twenty-five (25) percent of all diameter inches of protected trees within the project boundary/limits must be preserved.

(2) Calculations of Preservation Ratios

All percentage relating to preservation stated within this section shall be based the initial tree survey. Any subsequent redevelopment of public property must minimally preserve the applicable percentage of the total diameter inches of protected trees as indicated in the initial tree survey.

(3) Tree Retention Ratio

A minimum of ten (10) percent of the total diameter inches within the surveyed area must be retained in their original location when possible. Removal of additional trees, up to the percentage prescribed in this section, requires mitigation (see subsection (f) above).

(4) Design, Diversity and Desirability

The location of all improvements shall be orientated by the applicant, to the extent the applicant determines possible, in a manner which allows for the preserving of the greatest number of trees and in doing so is encouraged to acquire rights-of-way in such a manner. Applicants are also encouraged to preserve trees to meet the landscape and streetscape standards. Also as the particular site conditions warrant, the applicant shall preserve a diversity of species.

35-524 Woodlands Preservation Standards

The purpose of this Section is to encourage contiguous stands of trees. The City hereby finds and determines that preserving contiguous stands of trees provides significant benefits exceeding the preservation of individual trees, including:

- *Increased survivability rates.*
- *More effective stormwater management.*
- *More effective protection of air quality.*
- *Preservation of biodiversity and a variety of plant species, including understory.*

35-524 continued

This section establishes a minimum size for tree stands in order to ensure that they perform a significant biological function and to provide certainty in the approval process.

The City also finds and determines that delineating tree stands early in the process provides an economic advantage to the applicant. By designating trees early in the approval process, site infrastructure and lots can be planned around trees. By contrast, providing a tree survey late in the approval process, as is permitted by § 35-523, can involve unanticipated expenses and delay that could be resolved by early coordination with the City. Accordingly, this Section provides an optional process whereby applicants are encouraged to delineate woodlands early in the approval process, and are thereby excused from the individual tree surveys and construction measures required by § 35-523.

This Section implements the following provisions of the Master Plan:

Neighborhoods Element of the Master Plan, Policy 3c: Continue to implement the tree preservation ordinance and strengthen as needed.

(Ord. No. 97332 § 3)

(a) Applicability

The provisions of this Section provide an alternate method of approval to Section 35-523 and apply to any Application for Development Approval subject to an approved Stand Delineation, as described in subsection (d), below, and Appendix B to this Code. If a Stand Delineation is approved as provided herein, the tree protection requirements of Section 35-523, above, shall not apply, provided however, Heritage Trees shall be protected as provided in Section 35-523 notwithstanding approval of a Stand Delineation.

(Ord. No. 97332 § 3)

(b) Administration

See Section 35-478 of this Chapter.

(Ord. No. 97332 § 3)

(c) Violation, Enforcement and Penalties

See Section 35-493 of this Chapter.

(Ord. No. 97332 § 3)

(d) Stand Delineation

The Stand Delineation shall be used during the preliminary review process to determine the most suitable and practical areas for Woodland conservation. A Stand Delineation as provided by this section shall not substitute for the delineation of Protected Trees if there is no Woodland on the site. See Section 35-478 for Stand Delineation approval procedures, and Appendix B, Section 35-B125 for Stand Delineation submittal requirements.

(Ord. No. 97332 § 3)

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(e) Preservation Ratios

(1) The following Preservation Ratios are established for purposes of this Section:

Proposed Land Use	Preservation Ratio
Single-Family Residential, not more than two (2) dwelling units per acre	25%
Single-Family Residential, greater than two (2) dwelling units per acre	20%
Multi-family and Non-residential uses	15%

(2) The applicant shall comply with the Preservation Ratio by using one (1) of the following alternatives:

A. Preserving an area of continuous canopy coverage equal to the Net Area of the site multiplied by the applicable Preservation Ratio. Such areas shall be designated as "Tree Save Areas."

B. Providing Reforestation as prescribed in subsection (f), below.

(3) The following areas shall be considered priority for retention and protection, and shall be included in the Tree Save Area:

A. Trees, shrubs, and plants located in sensitive areas including 100-year floodplains, Streamside Management Zones, steep slopes, and critical wildlife habitat;

B. Contiguous Woodland that connects the largest undeveloped or most vegetated tracts of land within and adjacent to the site;

C. Trees, shrubs, or plants identified on the list of rare, threatened, and endangered species of the U.S. Fish and Wildlife Service or Texas Parks and Wildlife Department;

D. Trees that are part of a historic site or associated with a historic structure or designated by the Texas Forest Service on the Texas Big Tree Registry; and

E. Trees having a diameter measured at 4.5 feet above the ground of 30 inches or 75% of the diameter of the current National Champion Tree of that species as listed on the Texas Big Tree Registry maintained by the Texas Forest Service.

(4) The Applicant may include up to fifty percent (50%) of areas designated as Natural Areas, Greenways, or Greenbelts pursuant to the Parks and Open Space Standards (§ 35-503 of this Chapter) within the Tree Save Area. Such areas shall conform to the requirements of this Section.

(Ord. No. 97332 § 3)

(f) Mitigation Ratios

(1) Reforestation where used pursuant to subsection (e)(2) shall conform to the following:

Area Removed	Reforestation Ratio (percentage of acreage removed)
Less than the Tree Save Area	25%
At or more than the Tree Save Area	200%

[Commentary: An Applicant proposing a single-family development with six (6) dwelling units per acre has a 100-acre site with 40 acres of Woodlands. The mitigation ratio is as follows:

Tree Save Area (TSA) = 100 x 20% = 20 acres
Below TSA = 20 acres x 25% = 5 acres, plus
At or above TSA = 20 acres x 200% = 40 acres
Total Reforestation required = 40 + 5 = 45 acres]

(2) Each acre of Woodland retained on the net tract area above the applicable Preservation Ratio shall be credited against the total number of acres required to be reforested under subsection (1) of this subsection.

(3) The reforestation requirements under this section shall be accomplished within 1 year or 2 growing seasons after completion of the development project.

(4) Reforestation shall occur on-site except where:

- A. Off-site reforestation occurs within the same watershed or in accordance with a master plan where the applicant has demonstrated that no reasonable on-site alternative exists, or:
- B. Any on-site priority areas for reforestation have been planted in accordance with subsection (1) of this section; or
- C. The city has, by ordinance, designated woodland mitigation banks.

(5) The following shall be considered priority for forestation or reforestation:

- A. Establish or enhance Woodlands as buffers within Streamside Management Zones;
- B. Establish or increase existing Woodland corridors to connect existing Woodlands within or adjacent to the site. Where practical, Woodland corridors should be a minimum of 300 feet in width in order to facilitate wildlife movement;
- C. Establish or enhance Woodland buffers adjacent to critical wildlife habitat zones where appropriate;
- D. Establish or enhance Woodlands in 100-year floodplains;

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- E. Establish plantings to stabilize slopes of 25% or greater and slopes of 15% or greater which include the following soils as described in the Soils Survey: Austin Silty Clay, bracket clay loam, Brackett-Austin complex (Austin only), Gullied land, Houston clay, Houston-Sumter clays, Houston Black clay, Houston Black gravelly clay, San Antonio clay loam, Venus loam, Venus clay loam, Webb fine sandy loam, or Webb soils. Such areas may include the slopes of ravines or other natural depressions;
- F. Establish buffers adjacent to areas of differing land use where appropriate, or adjacent to highways or utility rights-of-way;
- G. Establish Woodlands adjacent to existing Woodlands so as to increase the overall area of contiguous Woodland, when appropriate; and

(Ord. No. 97332 § 3)

(g) Tree Protection During Construction

Woodlands within Tree Save Areas shall be protected as follows.

(1) A protective barrier must be erected around the perimeter of each Tree Save Area to be preserved and maintained until construction is completed.

(2) During construction, no excess soil, additional fill, equipment, liquids, or construction debris shall be placed inside the protective barrier nor shall any soil be removed from within the barrier.

(3) The proposed finished grade and elevation of land within six (6) feet of a Tree Save Area to be preserved shall not be raised or lowered more than three (3) inches unless compensated for by welling or retaining methods.

(Ord. No. 97332 § 3)

(h) Street and Utility Crossings

In order to permit limited crossings of the tree stand by roads and utilities in order to provide site access and to avoid creating a disincentive to using the tree stand delineation procedure, the following standards shall apply:

(1) Streets shall conform to the design standards for an "Access to Conservation Subdivision," as prescribed in the Transportation Standards of this Chapter. The street right-of-way shall not exceed thirty-four (34) feet, and the pavement width shall not exceed twenty-four (24) feet.

(2) Streets and utilities shall be located within the same right-of-way. Utilities shall not cross a Woodland subject to a Stand Delineation outside of the street right-of-way.

(3) Streets shall cross in a manner to minimize impact to trees and natural areas.

(4) Streets shall not be located on soils subject to erosion.

Division 6 Parking and Storage Standards**35-525 Outdoor Storage Standards****(a) Applicability**

The provisions of this Section apply to the keeping, in an unroofed area, any goods, junk, material, or merchandise in the same place for more than twenty-four (24) hours. For purposes of this Section, Outdoor Storage is divided into the following categories:

(1) Class 1 Storage

- The storage of passenger vehicles incidental to a Residential Use.
- The incidental storage of materials on construction sites.

(2) Class 2 Storage

Class 2 Storage includes the following:

- The storage of live plants on lots or parcels of not less than one (1) acre.
- The storage of goods incidental to the on-site sale of feed, grain, fertilizers, pesticides and similar goods, or the provision of agricultural services.
- The display, except along a property line of a lot zoned for a residential use, of the following merchandise outdoors: artwork or pottery; flowers or plants; food products; handcrafted goods; and recreational equipment, including roller skates, bicycles, windsurf boards, and watercraft.

(3) Class 3 Storage

Class 3 Storage includes the following:

- Storage of automobiles, noncommercial trucks, motorcycles, motor-homes, recreational vehicles, or boats for sale incidental to the use of a Lot or Parcel as a Car dealer, a Bus, Truck, Mobile Homes, Or Large Vehicle Dealer, or a Mini-Warehouse.
- Storage incidental to monument retail sales, including the retail sale of monuments for placement on graves, and the sale, storage, and delivery of headstones, footstones, markers, statues, obelisks, cornerstones, and ledgers.

(4) Class 4 Storage

Class 4 Storage involves the display of merchandise other than that described in Subsection (2) outdoors during business hours where screened from view off-premises.

(5) Class 5 Storage

Class 5 Storage includes any of the following:

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- A. The storage of sports equipment, watercraft, watercraft motors, trailers, motorcycles, or motor-homes.
 - B. The storage of materials or equipment related to research services, and excludes bulk warehousing or permanent storage of hazardous or toxic substances.
 - C. The storage, sale, dismantling or other processing of used or waste materials that are not intended for re-use in their original forms. This use includes automotive wrecking yards, junkyards, and paper salvage yards.
 - D. The long term storage of vehicles, including the storage of vehicles towed from private parking areas and impound yards, but excluding dismantling or salvage. For purposes of this subsection, "long term" means a period of at least fourteen (14) days.
 - E. Storage incidental to the use of a site for the eradication or control of rodents, insects, or other pests on sites other than where the service is rendered.
 - F. Storage of materials or equipment, including monument or stone yards, grain elevators, and open storage yards.
 - G. Storage incidental to the maintenance, repair, vehicular or equipment servicing, equipment service centers, commercial services, contracting, or industrial activities, or similar activities.
 - H. Storage incidental to the use of a site for manufacture, predominantly from previously prepared materials, of finished products or parts, including processing, fabrication, assembly, treatment, and packaging of products.
- Storage incidental to offices or administrative, clerical, or public contact services, together with incidental storage and maintenance of necessary vehicles.

(b) Standards

The standards for Outdoor Storage are based upon the classification of the storage activities as set forth in subsection (a), above. The Standards set forth in Column (A), below, apply to Class 1 Storage activities if there is an asterisk (*) in Column (B). The Standards set forth in Column (A), below, apply to Class 2 Storage activities if there is an asterisk (*) in Column (C). The Standards set forth in Column (A), below, apply to Class 3 Storage activities if there is an asterisk (*) in Column (D). The Standards set forth in Column (A), below, apply to Class 4 Storage activities if there is an asterisk (*) in Column (E). The Standards set forth in Column (A), below, apply to Class 5 Storage activities if there is an asterisk (*) in Column (F).

35-525(b) continued

(A) Standard	(B) Class 1	(C) Class 2	(D) Class 3	(E) Class 4	(F) Class 5
(1) Storage areas shall be restricted to the rear yard or, for passenger vehicles, to a garage or driveway.	*				
(2) Storage areas shall be located in the rear yard unless they are completely screened from view by the natural topography or by a Type "B" Buffer (see § 35-510(c), Buffer Standards of this Chapter) or, in the I-1 or I-2 districts, a fence which complies with § 35-510(g) of this Chapter.				*	*
(3) There shall be no storage of vehicles (other than noncommercial off-street parking), or storage or display of any merchandise or materials of any kind in any front yard, side yard or rear yard as required by this Chapter, which abuts any residential district unless a Type "C" Buffer (see § 35-510(c), Buffer Standards of this Chapter) is provided.		*	*	*	*
(4) Outdoor storage areas shall be screened from street view and adjacent residence, office, and commercial districts to a height commensurate with the location and height of the proposed storage. Outdoor storage areas shall be screened from the public street view to a height of at least six feet (6').				*	*
(5) The storage area shall not exceed 20 percent of the site.	*		*		
(6) The storage area shall not exceed 50 percent of the site.		*		*	

35-526 Parking & Loading Standards

This Section implements the following provisions of the Master Plan:

- *Urban Design, Policy 5g: additional parking where needed, but ensure that it is integrated into the surrounding environment.*
- *Urban Design, Policy 5g: Provide incentives to encourage private construction and ownership of structured parking facilities in those areas with the highest need.*
- *Urban Design, Policy 5g: Update parking code requirements to ensure that parking facilities reflect the surrounding natural, architectural and historic characteristics.*
- *Urban Design, Policy 5g: Promote mixed-use off-street parking facilities whereby two or more distinguishable land uses have a common parking area.*
- *Urban Design, Policy 5g: Enact reasonable maximum parking ratios.*

(a) General requirements

The off-street parking facilities required by this article shall be provided for all uses except where otherwise indicated by this Section. One specific exemption provided by this sections is that areas zoned "D" Downtown District shall be exempt from the off-street parking facilities provisions. The location, design, and number of spaces shall conform to the provisions of this Section. In the event a use is enlarged or expanded, the amount of off-street parking facilities that would be required if the increment were a separate use shall be provided.

(Ord. No. 97568 § 2)

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(b) Table of off-Street parking requirements

- (1) Table 526-3 establishes the minimum number of parking spaces required, the maximum number of parking spaces permitted, and the minimum number of bicycle spaces required, for the uses indicated. Applicants are entitled to a reduction in the minimum parking requirements of Table 526-3 pursuant to § 35-523(f)(2) of this Code to help meet the minimum tree preservation requirements.
- (2) Where the parking variable indicated in Table 526-3 is the number employees, the parking requirements shall be based on the largest shift rather than the total number of employees.
- (3) Where the parking variable indicated in Table 526-3 is square footage, the square footage shall not include any floor area accessory to a retail use devoted exclusively to storage or employee training.
- (4) For the purposes of parking calculations, the gross area of any parking garage within a building shall not be included within the Gross Floor Area of the building.
- (5) Structured Parking and Pervious Pavement shall not be subject to the maximum parking requirements.
- (6) The Administrator may waive up to fifty percent (50%) of the minimum parking spaces required by Table 526-3 upon a written finding that the waiver will result in the preservation of woodlands or significant stands of trees in a natural state, or that the waiver will further a public purpose established in the Master Plan.

TABLE 526-3a
"Parking in Residential Use Districts"

Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
ACCESSORY USES (SUPPLEMENTAL TO THE RESIDENTIAL USE)	N/A	N/A
ASSISTED LIVING OR ELDERLY HOME	0.3 per room	1 per room
ATHLETIC FIELDS (NON-COMMERCIAL & SUPPLEMENTAL TO THE RESIDENTIAL USE)	N/A	N/A
AUTOMOBILE NONCOMMERCIAL PARKING (Board of Adjustment)	1.5 per unit	2 per unit
BED and BREAKFAST	0.3 per room	1 per room
CEMETERY or MAUSOLEUM	N/A	N/A
CHILD - CARE INSTITUTION (BASIC)	1 per 375 sf GFA	1.5 per 375 sf GFA
CHURCH, TEMPLE, MOSQUE	1 per 8 seats	1 per 1.5 seats
DAYCARE CENTER (commercial or nonprofit)	1 per 375 sf GFA	1.5 per 375 sf GFA
DWELLING - 1 FAMILY (Attached or townhouse) cluster parking allowed	1 per unit	N/A
DWELLING - 1 FAMILY (Detached) cluster parking allowed	1 per unit	N/A
DWELLING - 2 FAMILY	1 per unit	2 per unit
DWELLING - 3 FAMILY	1.5 per unit	2 per unit
DWELLING - 4 FAMILY	1.5 per unit	2 per unit
DWELLING - ACCESSORY (Carriage houses, Granny flats, Echo homes) cluster parking allowed	1 per unit	N/A
DWELLING - COLLEGE FRATERNITY (Off Campus)	1 per 2 beds	1 per bed
DWELLING - School dormitories or housing (Off Campus)	1 per 2 beds	1 per bed
DWELLING - HUD-CODE MANUFACTURED HOMES (residential) cluster parking allowed	1 per unit	N/A
DWELLING - MULTIFAMILY (25 units maximum)	1.5 per unit	2 per unit

Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
DWELLING - MULTIFAMILY (30 units maximum)	1.5 per unit	2 per unit
DWELLING - MULTIFAMILY (40 units maximum)	1.5 per unit	2 per unit
DWELLING - MULTIFAMILY (50 units maximum)	1.5 per unit	2 per unit
DWELLING - ROWHOUSE, ZERO LOT LINE (cluster parking allowed)	1 per unit	NA
DWELLING – TOWNHOUSE (cluster parking allowed)	1 per unit	NA
FAMILY HOME	1 per 250 sf GFA	1 per 200 sf GFA
FARMING and TRUCK GARDEN	N/A	N/A
FOSTER FAMILY HOME	1 per 250 sf GFA	1 per 200 sf GFA
FOSTER GROUP HOME	1 per 375 sf GFA	1.5 per 375 sf GFA
GOLF COURSE (accessory to a residential subdivision)	N/A	N/A
GROUP DAY-CARE HOME	1 per 375 sf GFA	1.5 per 375 sf GFA
MUSEUM	1 per 1,000 sf GFA	1.5 per 1,000 sf GFA
NURSERY (1 acre minimum)	N/A	N/A
RADIO / TELEVISION STATION WITH TRANSMITTER TOWER	1 per employee	N/A
RECREATION FACILITY (PUBLIC & NON-COMMERCIAL)	1 per 600 sf GFA	1 per 500 sf GFA
REGISTERED FAMILY HOME (12 children maximum)	1 per 375 sf GFA	1.5 per 375 sf GFA
ROOMING HOUSE	0.3 per room	1 per room
SCHOOL - PRIVATE (includes Church schools, private schools K-12, privately owned college or university, trade or specialty school)	according to use	according to use
SCHOOL - PUBLIC (includes all ISD schools K-12, open enrollment charter schools, public college or university)	according to use	according to use
UNIVERSITY or COLLEGE (private)	1 per 4 students	1 per 2 students

Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
WIRELESS COMMUNICATION SYSTEM	N/A	N/A

(Ord. No. 96564 § 2, 3; Ord. No. 97568 § 2)

TABLE 526-3b
Parking in Non-Residential Use Districts

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
ACCESSORY	ACCESSORY USES - secondary or incidental to primary use	N/A	N/A
ALCOHOL	ALCOHOL – bar, lounge, tavern, nightclub, or dance hall Building area gross square footage (GSF)* * Gross square footage of entire building including accessory uses such as offices, kitchens, restrooms, storage areas, mechanical and dressing rooms.	1 per 100sf of GSF	1 per 75sf of GSF
ALCOHOL	ALCOHOL - beverage manufacture or brewery - alcohol	1 per 1,500 sf GFA	1 per 300 sf GFA
ALCOHOL	ALCOHOL - distillation, storage	1 per 600 sf GFA	1 per 350 sf GFA
ALCOHOL	ALCOHOL - microbrewery	1 per 2 seats	1 per 1.5 seats
ALCOHOL	ALCOHOL - beverage retail sales (Exclusive of bars, lounges, taverns, nightclubs, dance halls or sexually oriented businesses.)	1 per 300 sf GFA	1 per 200 sf GFA
ALCOHOL	ALCOHOL - winery with bottling	1 per 1,500 sf GFA	1 per 300 sf GFA
AMUSEMENT	ANIMAL RACETRACK and/or RODEO ARENA	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA
AMUSEMENT	CARNIVAL and/or CIRCUS	1 per 600 sf outdoor recreation area	1 per 500 sf outdoor recreation area
AMUSEMENT	CARNIVAL and/or CIRCUS (temporary for not more than 60 days)	1 per 600 sf outdoor recreation area	1 per 500 sf outdoor recreation area
AMUSEMENT	FAIRGROUND and/or STADIUM	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA
AMUSEMENT	MINIATURE GOLF	1 per hole	2 per hole
AMUSEMENT	AMUSEMENT and/or THEME PARK - outdoor rides	1 per 600 sf outdoor recreation area	1 per 500 sf outdoor recreation area
AMUSEMENT	BILLIARD OR POOL HALL - no alcohol in "C-2"	5 per 1,000 sf GFA	6 per 1,000 sf GFA
AMUSEMENT	BINGO PARLOR	5 per 1,000 sf GFA	6 per 1,000 sf GFA
AMUSEMENT	CARNIVAL and/or CIRCUS - temporary use (time set by City Council on individual case consideration)	1 per 600 sf outdoor recreation area	1 per 500 sf outdoor recreation area
AMUSEMENT	DANCE HALL	1 per 2 seats	1 per 1.5 seats
AMUSEMENT	GO-CART TRACK	1 per 6 seats of 1 per 30 sf of GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA if no permanent seats
AMUSEMENT	LASER HIDE & SEEK GAMES - indoors	1 per 6 seats of 1 per 30 sf of GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA if no permanent seats

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
AMUSEMENT	LASER HIDE & SEEK GAMES - outdoors permitted	1 per 6 seats of 1 per 30 sf of GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA if no permanent seats
AMUSEMENT	RACING - auto or truck track	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA
AMUSEMENT	THEATER - indoor permitting over 2 screens and/or stages	1 per 6 seats	1 per 4 seats
AMUSEMENT	THEATER - indoor with 2 or less screens and/or stages	1 per 6 seats	1 per 4 seats
AMUSEMENT	THEATER - outdoor including drive-in & amphitheaters	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA
AMUSEMENT	VIDEO GAMES - coin or token operated	1 per device	N/A
ANIMAL	ANIMAL - equestrian center and riding trails	1 per 1,500 sf GFA	1 per 300 sf GFA
ANIMAL	ANIMAL - pound or shelter	1 per employee	N/A
ANIMAL	BREEDER - small animal only	1 per 1,500 sf GFA	1 per 300 sf GFA
ANIMAL	CEMETERY - pets (limited to small animals)	N/A	N/A
ANIMAL	DOG TRAINING – indoor	1 per 1,500 sf GFA	1 per 300 sf GFA
ANIMAL	DOG TRAINING - outdoor permitted	1 per 1,500 sf GFA	1 per 300 sf GFA
ANIMAL	KENNEL - boarding & breeding (see health & environmental)	1 per 1,500 sf GFA	1 per 300 sf GFA
ANIMAL	PET GROOMING - small animals only	1 per 300 sf GFA	1 per 200 sf GFA
ANIMAL	SMALL ANIMAL CLINIC - no outside runs	1 per employee	N/A
ANIMAL	SMALL ANIMAL HOSPITAL - outside runs are permitted	1 per employee	N/A
ANIMAL	STOCKYARD	1 per 1,500 sf GFA	1 per 300 sf GFA
ANIMAL	VETERINARY HOSPITAL - large & small animal (outside runs, pens & paddocks permitted)	1 per employee	N/A
ANIMAL	VETERINARY HOSPITAL - large & small animal (no outside runs, pens & paddocks permitted)	1 per employee	N/A
ANIMAL	VETERINARY HOSPITAL - small animal (outside runs, pens & paddocks permitted)	1 per employee	N/A
ANIMAL	VETERINARY HOSPITAL - small animals (no outside runs, pens & paddocks permitted)	1 per employee	N/A
AUTO	TRUCK & HEAVY EQUIPMENT - auction	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AMBULANCE SERVICE	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
AUTO	AUTO - glass tinting	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AUTO - manufacture	1 per 1,500 sf GFA	1 per 300 sf GFA
AUTO	AUTO & LIGHT TRUCK - oil, lube & tune up	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AUTO & LIGHT TRUCK AUCTION	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AUTO & LIGHT TRUCK REPAIR	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	AUTO & VEHICLE SALES - new and used-small scale (no more than 15 vehicles currently licensed and in running condition on site at any given time for storage and/or sale)	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AUTO & VEHICLE SALES - new and used-large scale	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AUTO - rental (pickup & drop off only in "C-2")	1 per 1,000 sf GFA	1 per 200 sf GFA
AUTO	AUTO ALARM & RADIO - retail (install. incidental to sales in "C-2")	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AUTO GLASS SALES - installation permitted	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AUTO MUFFLER - installation and sales only	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
AUTO	AUTO PAINT & BODY - repair with outside storage limited to 3 vehicles (all outside storage of parts to be totally screened)	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	AUTO PAINT & BODY - repair with outside storage of vehicles and parts permitted but totally screened from view of adjacent property owners and public roadways	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	AUTO PARTS RETAIL - no outside storage in "C-2"	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	AUTO PARTS RETAIL - w/installation & no outside storage	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
AUTO	AUTO STATE VEHICLE INSPECTION STATION	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	AUTO UPHOLSTERY - sales and installation completely enclosed	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	CARWASH - automatic and attendant operated	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	CARWASH - automatic self service drive-thru	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	CARWASH - self service	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	LIMOUSINE SERVICE -dispatch & office use only no servicing of vehicles onsite	N/A	N/A
AUTO	PARKING & TRANSIENT VEHICLE STORAGE - related to a delivery (auto, truck, trailer & marine)(each vehicle limited to 24 hours maximum parking time within any 48 hour period in "C3", "D" & "L")	N/A	N/A
AUTO	PARKING AND/OR STORAGE - long term	N/A	N/A
AUTO	PARKING LOT - noncommercial	N/A	N/A
AUTO	PARKING LOT or GARAGE - commercial	N/A	N/A
AUTO	TAXI SERVICE - parking & dispatch (no washing or mechanical service permitted)	N/A	N/A
AUTO	TAXI SERVICE - parking & dispatch (washing or mechanical service permitted)	N/A	N/A
AUTO	TIRE REPAIR - auto & small truck (sale and installation only, no mechanical service permitted)	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	TRUCK REPAIR & MAINTENANCE	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
AUTO	TRUCK STOP OR LAUNDRY - full mechanical service & repair permitted	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	TRUCK STOP OR LAUNDRY - tire repair permitted	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	VEHICLE STORAGE - see "AUTO PARKING AND/OR STORAGE LONG TERM"	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
AUTO	WRECKER SERVICE	N/A	N/A
BEVERAGE	BEVERAGE MANUFACTURE - non-alcohol	1 per 1,500 sf GFA	1 per 300 sf GFA
CHURCH	CHURCH	1 per 8 seats	1 per 1.5 seats
DRY GOODS - wholesale	DRY GOODS - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
DWELLING	APARTMENT or EXTENDED STAY HOUSING - see (HOUSING - apartment or extended stay hotel)		
DWELLING	DWELLING - attached apartments with maximum density of 6 dwellings per gross acre (allowed ratio of 1 sq. ft. of residential floor use to 1 sq. ft. of nonresidential floor use)	1 per unit	1.9 per unit
DWELLING	DWELLING - attached apartments with maximum density of 10 dwellings per gross acre (allowed ratio of 1 sq. ft. of residential floor use to 1 sq. ft. of nonresidential floor use)	1 per unit	1.9 per unit
DWELLING	DWELLING - attachments apartments with maximum density of 20 dwellings per gross acre (allowed ratio of 2 sq. ft. of residential floor use to 1 sq. ft. of nonresidential floor use)	1 per unit	1.9 per unit
DWELLING	DWELLING - attached apartments with maximum density of 50 dwellings per gross acre (allowed ratio of 4 sq. ft. of residential floor use to 1 sq. ft. of nonresidential floor use)	1 per unit	1.9 per unit
DWELLING	DWELLING OTHER - see (HOUSING)		
DWELLING	GROUP DAY CARE - SEE (HOUSING - group day care limited to 12 individuals)		
DWELLING	HOTEL - SEE (HOUSING - hotel)		
DWELLING	MOTEL - see (HOUSING - motel)		
FABRIC	ELECTRONIC COMPONENT - fabrication	1 per 1,500 sf GFA	1 per 300 sf GFA
GOV.	ARMORY	N/A	N/A

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
GOV.	CORRECTION INSTITUTION	1 per employee on maximum shift, 1 per service vehicle	1 per employee on maximum shift, 1 per service vehicle
HOUSING	HOUSING - BOARDING HOUSE	1 per guest room plus 2 spaces for owners section	N/A
HOUSING	HOUSING - extended stay hotel or timeshares	1 per unit	1.9 per unit
HOUSING	HOUSING – group day care limited to 12 individuals	0.3 per room	1 per room
HOUSING	HOUSING – hotel	0.8 per room plus 1 per 800 sf of public meeting area and restaurant space	1 per room plus 1 per 400 sf of public meeting area and restaurant space
HOUSING	HOUSING - motel	0.8 per room plus 1 per 800 sf of public meeting area and restaurant space	1 per room plus 1 per 400 sf of public meeting area and restaurant space
INDUST	BATCHING PLANT	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	BATCHING PLANT - temporary in "C-3" and "L" (6 months maximum)	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	BOOKBINDER	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	CABINET or CARPENTER SHOP	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	CAN RECYCLE COLLECTION STATION - no shredding	1 per employee	N/A
INDUST	COFFEE ROASTING	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	CONTRACTOR FACILITY	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	CREAMERY	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	DRY CLEANING - plant	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	LAUNDRY – plant	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	LUMBER YARD and BUILDING MATERIALS	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
INDUST	MACHINE SHOP	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	PECAN SHELLING	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	RUG CLEANING	1 per 1,500 sf GFA	1 per 300 sf GFA
INDUST	WELDING SHOP - limited to three employees & screening of outside storage in "C-3"	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	ABRASIVE - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	ACETYLENE GAS - manufacturing & storage	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	AIR PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	ARTIFICIAL LIMB ASSEMBLY	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	ASBESTOS PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
MANF.	ASPHALT PRODUCTS - manufacturing	1 per 1,000 sf GFA	1 per 200 sf GFA
MANF.	BAG CLEANING	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	BATTERY - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	BEVERAGE - manufacturing or processing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	BIOMEDICAL PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	BOAT & MARINE - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	BOILER and TANK WORKS	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	BROOM, BRUSH - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	BUILDING SPECIALTIES - wholesale outside storage permitted	1 per 600 sf GFA	1 per 350 sf GFA
MANF.	BULK PLANT or TERMINAL	N/A	N/A
MANF.	CAN MANUFACTURE	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	CANDLE - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	CANDY - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	CANVAS PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	CHEMICAL - manufacturing or processing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	CHEMICAL/DRUG - wholesale & storage	1 per 600 sf GFA	1 per 350 sf GFA
MANF.	CLOTHING MANUFACTURE - chemical process	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	CLOTHING MANUFACTURE - non-chemical process	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	CONCRETE PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	COTTON COMPRESS, GINNING and BAILING	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	DRUG - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	ELECTRONIC COMPONENT - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	ELECTROPLATING	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	FELT PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	GLASS MANUFACTURE	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	GRAIN – drying	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	GRAIN – milling	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	HATCHERY	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	HAZARDOUS MATERIALS HAULING or STORAGE	1 per employee	N/A
MANF.	HOSIERY - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	ICE CREAM - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	ICE PLANT - manufacturing & processing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	INSULATION PRODUCTS - manufacturing & processing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	JUNKYARD or SALVAGE YARD	1 per employee	N/A

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
MANF.	PETRO CHEMICALS BULK STORAGE	1 per employee	N/A
MANF.	MATTRESS - manufacturing & rebuilding	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	METAL FORGING or ROLLING MILL	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	METAL PRODUCTS - fabrication	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	MILLINERY - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	MILLWORK & WOOD PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	MOVING and TRANSFER COMPANY - with trucks attached to trailers for a total exceeding 24 feet in length	N/A	N/A
MANF.	NOVELTY and SOUVENIR - manufacture	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	NUCLEAR or RADIOACTIVE INSTRUMENTATION – manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	OFFICE EQUIPMENT, FURNITURE - manufacture	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	OIL WELL SUPPLIES and MACHINERY - manufacturing.	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PACKING and GASKET - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PACKING PLANT - no rendering	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PAINTS, ETC. - manufacturing & processing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PAPER PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PETROLEUM - manufacturing or processing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PIPE STORAGE	1 per 600 sf GFA	1 per 350 sf GFA
MANF.	PLANING MILL	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PLASTIC / VINYL - manufacturing or processing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PLAYGROUND EQUIPMENT - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	POULTRY PROCESSING - caged hen operation	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	POULTRY PROCESSING & LIVE POULTRY STORAGE - completely enclosed	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	PROCESSING - other than food	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	REFRIGERATION EQUIPMENT - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	RENDERING PLANT	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	SAND or GRAVEL - storage & sales	1 per 600 sf GFA	1 per 350 sf GFA
MANF.	SHOE - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	SHOE - wholesale (manufacturing permitted)	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	SHOE POLISH - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	SIGN MANUFACTURE	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	STONE CURING, MONUMENT - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	STORAGE - outside (open with no screening required)	1 per 600 sf GFA	1 per 350 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
MANF.	STORAGE - outside (screening from public ROWs and adjacent property required)	1 per 600 sf GFA	1 per 350 sf GFA
MANF.	TEXTILE - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	TILE - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	TILE , ROOFING & WATERPROOFING PRODUCTS – manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	TOBACCO - processing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	TOOL - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	TOY - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	TRAILER - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	VENETIAN BLIND - cleaning & fabrication	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	VULCANIZING, RECAPPING	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	WATER DISTILLATION	1 per employee	N/A
MANF.	WELL DRILLING CONTRACTOR	1 per 1000 sf GFA	1 per 200 sf GFA
MANF.	WIRE PRODUCTS - manufacturing	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	WOOD PROCESSING by CREOSOTING or OTHER PRESERVING TREATMENT	1 per 1,500 sf GFA	1 per 300 sf GFA
MANF.	WOOL PULLING and SCOURING	1 per 1,500 sf GFA	1 per 300 sf GFA
MEDICAL	MEDICAL - surgical supplies wholesale	1 per 600 sf GFA	1 per 350 sf GFA
OFFICE	AERIAL SURVEY - Administrative offices no on-site flight services	1 per 1,000 sf GFA	1 per 200 sf GFA
OFFICE	OFFICE	1 per 300 sf GFA	1 per 140 sf GFA
OFFICE	OFFICE - less than 3,000 sq. ft. and less than 35 ft. in height	1 per 300 sf GFA	1 per 140 sf GFA
PLANTS	FLORIST - wholesale	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
PLANTS	LANDSCAPING MATERIALS - sales & storage	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
PLANTS	NURSERY - plant wholesale onsite growing permitted	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
PRINT	PRINTER - large scale other than quick print	1 per 1,500 sf GFA	1 per 300 sf GFA
PROCESSING	COSMETICS - manufacturing or processing	1 per 1,500 sf GFA	1 per 300 sf GFA
PROCESSING	FOOD & FOOD PRODUCTS - processing	1 per 1,500 sf GFA	1 per 300 sf GFA
PROCESSING	PUNCH CONCENTRATE - processing & mixing	1 per 1,500 sf GFA	1 per 300 sf GFA
PROCESSING	PUNCH CONCENTRATE PRODUCTS - mixing only	1 per 1,500 sf GFA	1 per 300 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
RECREATION	ARCHERY RANGE - outdoor	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	ARCHERY RANGE - indoor	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	ATHLETIC FIELDS - noncommercial	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	ATHLETIC FIELDS - commercial	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	BOWLING ALLEY	2 per lane	4 per lane
RECREATION	GOLF COURSE - private (see residential use table)	N/A	6 per hole
RECREATION	GOLF COURSE - publicly owned	N/A	6 per hole
RECREATION	GOLF DRIVING RANGE	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	RECREATIONAL FACILITY - private community wide	1.5 per 1,000 sf GFA	10 per 1,000 sf GFA
RECREATION	RECREATIONAL FACILITY - private neighborhood	1.5 per 1,000 sf GFA	10 per 1,000 sf GFA
RECREATION	RECREATIONAL FACILITY - public community wide	1.5 per 1,000 sf GFA	10 per 1,000 sf GFA
RECREATION	RECREATIONAL FACILITY - public neighborhood	1.5 per 1,000 sf GFA	10 per 1,000 sf GFA
RECREATION	RIFLE & PISTOL RANGE - indoor	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	RIFLE & PISTOL RANGE - outdoor permitted	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	SKATEBOARD TRACK	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	SKATING RINK - ice or roller skating	5 per 1,000 sf GFA	7 per 1,000 sf GFA
RECREATION	STABLE & EQUESTRIAN CENTER	1 per 1,500 sf GFA	1 per 300 sf GFA
RECREATION	TENNIS, RACQUETBALL or HANDBALL - noncommercial (outside courts permitted)	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	TENNIS, RACQUETBALL or HANDBALL - commercial (outside courts not permitted)	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	TENNIS, RACQUETBALL or HANDBALL - commercial (outside courts permitted)	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
RECREATION	TENNIS, RACQUETBALL or HANDBALL - noncommercial (outside courts not permitted)	1 per 6 seats or 1 per 30 sf GFA if no permanent seats	1 per 4 seats or 1 per 50 sf of GFA is no permanent seats
RECREATION	RECREATIONAL VEHICLE PARK	N/A	N/A
RETAIL	AIR CONDITIONERS - retail (incidental to other onsite retail items in "D")	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	ANTIQUA STORE - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	APOTHECARY - see (DRUGSTORE - apothecary)	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	APPAREL & ACCESSORY STORE - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	APPLIANCE - retail (incidental to other onsite retail items in "D")	1 per 400 sf GFA	1 per 200 sf GFA
RETAIL	ART GALLERY	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	BAKERY – retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	BOOKSTORE	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	BUSINESS MACHINES - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	CAMERA, PHOTOGRAPHIC EQUIPMENT & SUPPLIES – retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	CANDY, NUT and CONFECTIONERY - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	CATERING SHOP	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	CONVENIENCE ICE HOUSE - retail convenience store	6 per 1,000 sf GFA	10 per 1,000 sf GFA
RETAIL	CONVENIENCE STORE - w/ gas sales	6 per 1,000 sf GFA	10 per 1,000 sf GFA
RETAIL	DAIRY PRODUCTS - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	DRUGSTORE - apothecary	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	DRY GOODS - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FARM SUPPLIES	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FEED, SEED, FERTILIZER SALES - no outside storage in "C-3"	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FISH MARKET - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FLEA MARKET - indoor	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FLEA MARKET - outdoor	1 per 375 sf GFA of sales and service building	1.5 per 375 sf GFA of sales and service building
RETAIL	FLOOR COVERING - retail (incidental to other onsite retail items in "D")	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FLORIST – retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FOOD LOCKER PLANT - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FOOD STORE - limited in "C-1" to maximum 3000 sq. ft. total floor area	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	FRUIT and PRODUCE - retail	1 per 300 sf GFA	1 per 200 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
RETAIL	FURNITURE SALES - retail	1 per 600 sf GFA	1 per 200 sf GFA
RETAIL	GIFT SHOP - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	GLASS – retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	GROCERY STORE - retail (limited to maximum 3000 sq. ft. total in "C-1")	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	HARDWARE SALES - retail (limited to maximum 3000 sq. ft. total in "C-1")	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	HEAD SHOP	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	HOBBY STORE - retail (limited to maximum 3000 sq. ft. total in "C-1")	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	HOME IMPROVEMENT CENTER	1 per 400 sf GFA of sales and service building	1.5 per 375 sf GFA of sales and service building
RETAIL	JEWELRY STORE - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	LEATHER GOODS or LUGGAGE STORE - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	MEDICAL - surgical supplies retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	MILLINER - custom	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	MUSIC STORE	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	NEWSSTAND	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	NURSERY – retail (growing plants on site permitted)	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	NURSERY - retail (no growing plants on site permitted)	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	OFFICE EQUIPMENT and SUPPLY - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	PAINT and WALLPAPER STORE - retail & wholesale	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	PET SHOP - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	PLUMBING FIXTURES - retail (incidental to other onsite retail items in "D")	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	RUG or CARPET - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	SECONDHAND MERCHANDISE - retail no outside storage or display of inventory permitted)	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	SHOE – retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	SILK SCREENING - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	SPORTING GOODS - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	STAMPS and COIN SALES - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	STATIONARY PRODUCTS - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	TAMALE - preparation retail (less than 2,000 sq. ft. in "C-1" & "C-2")	1 per 300 sf GFA	1 per 200 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
RETAIL	THRIFT STORE - retail see (SECONDHAND MERCHANDISE)	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	TOBACCO STORE - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	TOY STORE - retail	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	TROPHY SALES, ENGRAVING & ASSEMBLY	1 per 300 sf GFA	1 per 200 sf GFA
RETAIL	VARIETY STORE - retail	1 per 300 sf GFA	1 per 200 sf GFA
SALES	BOAT - sales & service	1 per 600 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
SALES	MACHINERY, TOOLS & CONSTRUCTION EQUIPMENT SALES & SERVICE	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
SALES	FARM EQUIPMENT SALES, SERVICE or STORAGE	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
SALES	OIL WELL SUPPLIES and MACHINERY SALES – used	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
SALES	PORTABLE BUILDING SALES	1 per 300 sf GFA	1 per 200 sf GFA
SCHOOL	SCHOOL - private university or college	1 per 4 students	1 per 2 students
SCHOOL	SCHOOL - public university or college	1 per 4 students	1 per 2 students
SCHOOL	SCHOOL - Montessori	1 per classroom	2 per classroom
SCHOOL	SCHOOL - nursery (public & private)	1 per classroom	2 per classroom
SCHOOL	SCHOOL - private pre-kindergarten through 12th grade	1 per classroom	2 per classroom
SCHOOL	SCHOOL – public pre-kindergarten through 12th grade	1 per classroom	2 per classroom
SERVICE	AIR CONDITIONING / REFRIGERATION - service & repair	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	ALTERING/REPAIRING OF APPAREL	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	AMMUNITION - manufacturing, loading & storage	1 per 1,500 sf GFA	1 per 300 sf GFA
SERVICE	APPLIANCE - repair major	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	APPLIANCE - repair small	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	AUDITORIUM	1 per 6 seats or 1 per 30 sf if no permanent seating	1 per 4 seats or 1 per 50 sf if no permanent seating
SERVICE	BANK, SAVINGS and LOAN	1 per 1,000 sf GFA	1 per 200 sf GFA
SERVICE	BARBER or BEAUTY SHOP	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	BICYCLE – repair	1 per 375 sf GFA of sales and service building	1.5 per 375 sf GFA of sales and service building
SERVICE	BOAT & MARINE - storage (outside permitted)	1 per 600 sf GFA	1 per 350 sf GFA
SERVICE	BODY PIERCING	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	CEMETERY or MAUSOLEUM	N/A	N/A
SERVICE	COPY OR BLUEPRINTING - example "Quick Print"	1 per 300 sf GFA	1 per 200 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
SERVICE	COPY SERVICE - blueprinting and photocopying	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	COSMETICS - permanent	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	DAY-CARE CENTER - child and/or adult care	1 per 375 sf GFA	1.5 per 375 sf GFA
SERVICE	DELICATESSEN	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	DRY CLEANING - limited to five employees	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	DRY CLEANING - pickup station only	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	ELECTRIC REPAIR - heavy equipment	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	ELECTRIC REPAIR - light equipment	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	ELECTRONIC EQUIPMENT - repair	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	ELEVATOR MAINTENANCE - service	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	EMPLOYMENT AGENCY	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	EXTERMINATORS	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	FOOD - restaurant or cafeteria	1 per 100 sf GFA	1 per 40 sf GFA
SERVICE	FUNERAL HOME or UNDERTAKING PARLOR	1 per 4 seats	1 per 2 seats
SERVICE	FURNITURE REPAIR / UPHOLSTERING	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	GASOLINE FILLING STATION - w/o repair service (car wash allowed)	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
SERVICE	GASOLINE FILLING STATION - with repair service and/or car wash	1 per 500 sf GFA including service bays, wash tunnels and retail areas	1 per 375 sf GFA including service bays, wash tunnels and retail areas
SERVICE	GUNSMITH	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	GYMNASIUM - commercial	1.5 per 1000 sf GFA	10 per 1,000 sf GFA
SERVICE	JANITORIAL / CLEANING SERVICE	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	LABORATORY - research	1 per 1,000 sf GFA	1 per 200 sf GFA
SERVICE	LABORATORY - testing	1 per 1,000 sf GFA	1 per 200 sf GFA
SERVICE	LAUNDRY and DRY CLEANING - self service	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	LAUNDRY- limited to max of five employees	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	LAUNDRY or DRY CLEANING - pickup station only	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	LAWNMOWER REPAIR AND SERVICE - no outside storage in "C-2"	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	LIBRARY	1 per 300 sf GFA	1 per 125 sf GFA
SERVICE	LINEN or UNIFORM SUPPLY, DIAPER SERVICE (pickup & supply only)	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	LOAN OFFICE	1 per 1,000 sf GFA	1 per 200 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
SERVICE	LOCKSMITH	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	MANUFACTURED HOME / OVERSIZE VEHICLE SALES, SERVICE or STORAGE	1 per 500 sf GFA of sales and service building	1 per 375 sf GFA of sales and service building
SERVICE	MASSAGE - parlor	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MASSAGE - therapeutic	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MEDICAL - chiropractor office	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MEDICAL – clinic (physician and/or dentist)	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MEDICAL – clinic physical therapist	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MEDICAL - hospital or sanitarium	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MEDICAL - laboratory dental or medical	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MEDICAL - optical goods retail	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	MEDICAL - optical goods wholesale	1 per 600 sf GFA	1 per 350 sf GFA
SERVICE	MEDICAL - optician	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MEDICAL - optometry office	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MINI WAREHOUSE - over 2.5 AC. requires specific use permit in "C3" & "D"	4 spaces plus 2 for manager's quarters	N/A
SERVICE	MORTUARY - embalming and preparation only	1 per 400 sf GFA	1 per 100 sf GFA
SERVICE	MOVIE RENTALS	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	PALM READING	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	PAWN SHOP	1 per 300 sf GFA	1 per 150 sf GFA
SERVICE	PICTURE FRAMING	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	POST OFFICE	1 per employee	N/A
SERVICE	READING ROOM	1 per 300 sf GFA	1 per 125 sf GFA
SERVICE	REDUCING SALON	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	SCHOOL - business college	1 per 200 sf	1 per 150 sf
SERVICE	SCHOOL - trade (no outside storage & training area permitted)	1 per 200 sf	1 per 150 sf
SERVICE	SCHOOL - trade (outside storage & training area permitted)	1 per 200 sf	1 per 150 sf
SERVICE	SELF-DEFENSE INSTRUCTION	1 per 200 sf	1 per 150 sf
SERVICE	SHOE – repair	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	SIGN SHOP – no outside storage	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	STUDIO - fine or performing arts	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	STUDIO – interior decorating	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	STUDIO - photographic	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	STUDIO - sound & recording	1 per 300 sf GFA	1 per 200 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
SERVICE	TAILOR SHOP	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	TATTOO PARLOR/STUDIO	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	TAXIDERMIST	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	TOOL RENTAL - fenced & screened outside storage permitted	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	TOOL RENTAL - outside storage permitted	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	TREE CUT & TRIM SERVICE	1 per 300 sf GFA	1 per 200 sf GFA
SERVICE	WATCH REPAIR	1 per 300 sf GFA	1 per 200 sf GFA
SOCIAL	CLUB – private	1 per 3 persons	N/A
SOCIAL	CLUBHOUSE - private including lodges & meeting halls	1 per 3 persons	N/A
STORAGE	CARTING, CRATING, HAULING, STORAGE	1 per 600 sf GFA	1 per 350 sf GFA
STORAGE	COLD STORAGE PLANT	1 per 600 sf GFA	1 per 350 sf GFA
STORAGE	FUR DYEING, FINISHING and STORING	1 per 1,500 sf GFA	1 per 300 sf GFA
STORAGE	ICE CREAM TRUCK STORAGE	N/A	N/A
STORAGE	MOVING COMPANY	N/A	N/A
STORAGE	STORAGE - outside (under roof and screened)	1 per 600 sf GFA	1 per 350 sf GFA
TRANSPORTATION	AIRPORT - non-governmental	1 per 666 emplanements	N/A
TRANSPORTATION	FREIGHT DEPOT	N/A	N/A
TRANSPORTATION	HELIPORT	1 per 4 seating accommodations for waiting passengers plus 0.5 per employee	N/A
TRANSPORTATION	HELISTOP	N/A	N/A
TRANSPORTATION	PASSENGER DEPOT	1 per employee	N/A
UTILITIES	RADIO or TELEVISION STATION WITHOUT TRANSMISSION TOWER	1 per service employee	N/A
UTILITIES	TELEPHONE EQUIPMENT INFRASTRUCTURE	1 per service employee	N/A
UTILITIES	WIRELESS COMMUNICATION SYSTEMS	1 per service employee	N/A
UTILITY	SANITARY LANDFILL, SOLID WASTE FACILITY	1 per employee	N/A
WAREHOUSE	OFFICE WAREHOUSE (FLEX SPACE) - outside storage not permitted	1 per 2,000 sf GFA	1 per 200 sf GFA
WAREHOUSING	WAREHOUSING	1 per 5,000 sf GFA	1 per 350 sf GFA
WHOLE.	BAKERY - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	BARBER and BEAUTY EQUIPMENT - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	CAMERA, PHOTOGRAPHIC EQUIPMENT & SUPPLIES - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	DAIRY EQUIPMENT SALES - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	DAIRY PRODUCTS - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	DRUG SALES - wholesale	1 per 600 sf GFA	1 per 350 sf GFA

	Permitted Use	Minimum Vehicle Spaces	Maximum Vehicle Spaces
WHOLE.	FISH MARKET - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	FOOD PRODUCTS - wholesale & storage	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	FRUIT and PRODUCE - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	FURNITURE SALES - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	GLASS - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	GROCERY - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	HARDWARE SALES - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	OFFICE EQUIPMENT and SUPPLY - wholesale (incidental to other onsite retail items in "D")	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	PAPER SUPPLIES - wholesale (incidental to onsite retail items in "C-3" and "D")	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	PLUMBING FIXTURES - wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	SHOE - wholesale no manufacturing	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	SPORTING GOODS - wholesale (incidental to onsite retail items in "D")	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	STONE MONUMENT - retail & wholesale	1 per 600 sf GFA	1 per 350 sf GFA
WHOLE.	TAMALE - preparation wholesale (less than 2,000 sq. ft. in C-1 & C-2)	1 per 600 sf GFA	1 per 350 sf GFA

(Ord. No. 96564 § 2; Ord. No. 97501 § 2; Ord. No. 97568 § 2)

(c) Responsibility for off-Street parking facilities

The provision for and maintenance of off-Street parking facilities shall be the responsibility of the operator and owner of the use, structure and/or land on which is located the use for which off-Street parking facilities are required.

(d) Size and location**(1) Dimensions**

Off-Street parking spaces shall have minimum dimensions of nine (9) feet in width and eighteen (18) feet in length, exclusive of access or maneuvering area, ramps and other appurtenances and except as provided in subsection (b). Stall Depth shall be based upon the angle of parking, as set forth in Column (B) of Table 526-1. The minimum width of access aisles internal to a parking lot or structure shall be as prescribed in Column (C) of Table 526-1.

(2) Compact vehicles

Up to thirty (30) percent of the required parking spaces may be designated for use by compact vehicles with minimum dimensions of eight (8) feet in width and sixteen (16) feet in length. Compact vehicle parking areas shall be identified by individually marking each parking space surface with lettering a minimum of six (6) inches in size.

**Table 526-1
Minimum Stall Length and Aisle Width (Feet)**

(A) Parking angle	(B) Stall Depth		(C) Aisle Width	
	Car-to-Wall Stalls	Interlocking Stalls	One-Way Operation	Two-Way Operation
30°	17	13	12	19
45°	19	16	12	19
60°	20	18	16	20
75°	20	19	22	22
90°	18	18	25	25

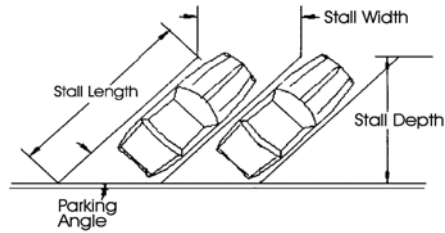
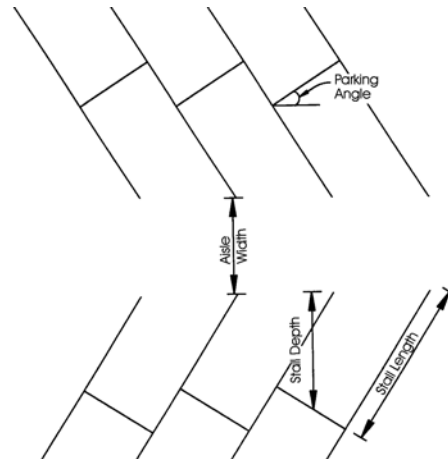
* Parking Angles Permitted by City of San Antonio.

Rules of Interpretation for Table 526-1:

- A. The aisle is the traveled path through a parking facility which provides access to one or 2 parking vehicles
- B. Stall Length refers to the length of the parking stall measured perpendicular to the angle of parking. Stall Depth is the projected vehicle length from the wall measured perpendicular to the aisle.

[Reference: Weant & Levinson, *Parking* (Eno Foundation, 1990).

35-526 continued

**Car-to-Wall Stall****Interlocking Stall****(3) Location**

Except as otherwise permitted under a cooperative parking plan, off-street parking facilities shall be located on the lots) on which the use or structure for which they are provided is located.

(4) Turnarounds

All parking areas containing three (3) or more parking spaces shall include a turnaround which is designed and located so that vehicles can enter and exit the parking area without backing onto a public right-of-way.

(e) Construction and maintenance

Off-street parking facilities shall be constructed, maintained and operated in accordance with the following specifications:

(1) Drainage and surfacing

Areas shall be properly graded for drainage, surfaced with concrete, asphaltic concrete, or asphalt and maintained in good condition free of weeds, dust, trash and debris.

(2) Wheel guards

Boundary or perimeter areas shall be provided with wheel guards, bumper guards or continuous curbing so located that no part of parked vehicles will extend beyond the property line of the parking area. One (1) wheel stop shall be placed at the end of each parking space.

(3) Protective screen fencing

Areas shall be provided with protective screen fencing so that occupants of adjacent structures are not unreasonably disturbed by the movement of vehicles either during the day or night.

(4) Lighting

Facilities shall be arranged so that the source of light is concealed from public view and from adjacent residential properties and does not interfere with traffic.

(5) Entrances and exits

Facilities shall be provided with entrances and exits consistent with the requirements of § 35-506(r) of this Chapter.

(6) Prohibition of other uses

Facilities shall not be used for the sale, repair, dismantling, or servicing of any vehicle, equipment, materials, or supplies.

(7) Limitation on size of vehicles

In residential districts facilities shall be used only by vehicles up to three-fourths (3/4) ton.

(f) Sharing off-Street parking facilities – Cooperative Parking Plan

Pursuant to the following procedure, either part of all of the required off-Street parking facilities may be located on a site other than the one occupied by the use or structure requiring such facilities.

(1) Cooperative parking plan

Two (2) or more uses may share the same off-Street parking facilities and each use may be considered as having provided such shared space individually. Such shared parking space, however, shall not be considered as having been provided individually unless the schedules of operation of all such uses are such that none of the uses sharing the facilities require the off-Street parking facilities at the same time. This arrangement for sharing of off-Street parking facilities shall be known as a cooperative parking plan.

(2) Application for approval of cooperative parking plan

An application for approval of a cooperative parking plan shall be filed with the Director of Development Services by the owner of the entire land area to be included within the cooperative parking plan, the owner or owners of all structures then existing on such land area, and all parties having a legal interest in such land area and structures. Sufficient evidence to establish the status of applicants as owners of parties in interest shall be provided. The application shall include plans showing the location of the uses or structures for which off-Street parking facilities are required, the location of the off-Street parking facilities, and the schedule of times used by those sharing in common.

(3) Registration of cooperative parking plan

The application shall be reviewed and approved or disapproved by the Director of Development Services. Upon approval, a copy of the plan shall be registered among the records of the Director of Development Services and shall thereafter be binding upon the applicants, their heirs, successors and assigns. The registration shall limit and control the issuance and validity of permits and certifications and shall restrict, limit, and control the use and operation of all land and structures included within such cooperative parking plan.

35-526(f) continued

(4) Amendment or withdrawal of cooperative parking plan

Pursuant to the same procedure and subject to the same limitations and requirements by which the cooperative parking plan was approved and registered, any such plan may be amended or withdrawn, either partially or completely, if all land and structures remaining under such plan comply with all the conditions and limitations of the plan and all land and structures withdrawn from such plan comply with the regulations of this chapter.

(Ord. No. 98697 § 1)

(g) Shared Parking Facilities – Mixed Use Developments

Developments which contain a mix of uses on the same parcel, as set forth in Table 526-2 below, may reduce the amount of required parking in accordance with the following methodology:

- (1) determine the minimum parking requirements in accordance with Table 526-2 for each land use as if it were a separate use,
- (2) multiply each amount by the corresponding percentages for each of the five time periods set forth in Columns (B) through (F) of Table 526-2,
- (3) calculate the total for each time period, and
- (4) select the total with the highest value as the required minimum number of parking spaces.

The number of parking spaces may be reduced in accordance with this table without a cooperative parking plan.

Table 526-2

(A) Land Use	Weekday		Weekend		(F) Nighttime (midnight - 6 a.m.)
	(B) Daytime (9 a.m. - 4 p.m.)	(C) Evening (6 p.m. - midnight)	(C) Daytime (9 a.m. - 4 p.m.)	(E) Evening (6 p.m. - midnight)	
Office/Industrial	100%	10%	10%	5%	5%
Retail	60%	90%	100%	70%	5%
Hotel	75%	100%	75%	100%	75%
Restaurant	50%	100%	100%	100%	10%
Entertainment/ Commercial	40%	100%	80%	100%	10%

(h) Minimum requirements

The minimum requirements for off-street parking facilities in all zones other than the “D” Downtown District shall be governed by Table 526-3. The classification of uses enumerated in the table are general and are intended to include all similar uses. Where a classification of uses is not determined from the table, the Director of Development Services, after consulting with the Director of Planning, shall fix the classification. Provided, however, said minimum requirements may be reduced in accordance with the provisions of § 35-523(f)(2).

35-526(h) continued

Where any requirement for five (5) or more parking spaces results in a fractional unit, a fraction of one-half (1/2) or more shall be considered a whole unit and a fraction less than one-half (1/2) shall be disregarded. In those cases in which less than five (5) spaces are required, a full parking space shall be required to fulfill a fractional space requirement.

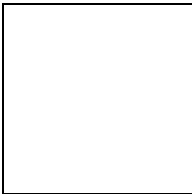
(Ord. No. 98697 § 1; Ord. No. 98697 § 6)

(i) Pervious Pavement

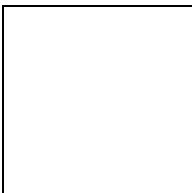
Vehicle Parking spaces may exceed the maximum number of spaces permitted if the additional spaces are designed as Pervious Pavement. Pervious Pavement shall comply with the following:

- (1) Pervious Pavement shall be located only on soils having a permeability rating of Moderate Rapid to Very Rapid (see definition of Permeability in Appendix A of this Chapter).
- (2) Pervious Pavement shall not be located in soils with an apparent or perched high water table or a depth to bedrock of less than ten (10) feet, as set forth in Table 3 of the Soil Survey.
- (3) Pervious Pavement shall not be located on any slope exceeding ten percent (10%) over twenty (20) feet.
- (4) The Pervious Pavement area shall be vacuum-swept and washed with a high-pressure hose not less than four (4) times per year.

References: American Society of Civil Engineering Design and Construction of urban Stormwater Management systems (WEF Manual of Practice FD-20, 1992), at 496-97; Dewberry & Davis, Land Development Handbook: Planning, Engineering & Surveying (McGraw-Hill: 1996), at 629.



Source: North Carolina Cooperative Extension, Onslow County Center



Source: US EPA, Porous Pavement: Design & Operational Criteria (Aug. 1980)

35-526 continued

(j) Rear Parking Design Standards

Parking the rear of the Principal Use or Principal Building is encouraged. Off-street surface parking areas which are screened from the view of public streets by the Principal Buildings shall be exempt from the parking lot screening requirements of the Landscaping Standards of this Chapter.



Large surface parking areas lengthen travel distances between buildings and create conflicts between pedestrians and traffic.

(k) Bicycle Spaces

Where bicycle spaces are required by Table 526-3, the spaces shall be located within fifty (50) feet of the primary entrance. The spaces shall not be located behind any wall, shrubbery, or other visual obstruction lying between the Principal Building and the bicycle spaces. Bicycle spaces may be provided through spaces or bicycle storage racks. Bicycle spaces shall be at least 2'6" in width and 6'0" in length and shall be separately marked.



Rear parking and small front setbacks minimize walking distances between buildings and create conflicts between pedestrians and vehicles.

Adapted from: M. Greenberg, *The Poetics of Cities* (1995), at 205.

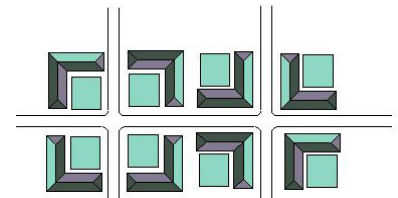
(l) Maximum requirements in Edwards Recharge Zone District (ERZD)**(1) Generally**

Unless as provided for in subsection (2) below, the maximum ratio of off-Street parking for uses located within the ERZD shall be seven (7) parking spaces for each one thousand (1,000) square feet of gross floor area (7/10 of one space per one hundred (100) square feet) for any use.

(2) Exception

In the event that the minimum off-Street parking requirements under this subdivision require more than seven (7) parking spaces for each one thousand (1,000) square feet of gross floor area for a use which is located within the ERZD, such minimum requirements shall be complied with, but may not be exceeded.

A: Front Parking A: Rear Parking



Front parking areas (Figure A) create long distances between commercial destinations, while rear parking and shallow setbacks (Figure B) permit customers to reach multiple destinations on foot.

Adapted from: M. Greenberg, *The Poetics of Cities* (1995), at 198.

(m) Cluster Parking

- (1) There shall be no maximum size for cluster parking areas.
- (2) Ownership, administration, parking rights, limitations, maintenance, permitted uses and fees shall be by recorded instrument and shall be by recorded instrument and shall be covenants running with the land of the lot to which they are applicable. The recorded instrument shall also reflect that the cluster parking area shall not be converted to any other use until it is replaced by a fully constructed parking facility meeting the requirements of this code or until such time that the lots being served have constructed and completed on them the required off street parking and that each lot that has an on site parking requirement met in whole or part by means of cluster parking shall have on site parking spaces plus cluster parking spaces assigned/reserved in a number equal to the number of on site parking spaces required by this code.
- (3) Additional parking may be provided for visitors but shall be clearly designated by markings to distinguish them from owner and/or tenant spaces. When feasible it is encouraged that visitor cluster parking and owner and/or tenant cluster parking be physically separated.

35-526(m) continued

- (4) The assigned or reserved space in cluster parking for owners and/or tenants shall be no greater than a maximum distance of 500 feet from the nearest entry of each structure for which the parking is assigned and/or reserved.
- (5) Design and construction of the cluster parking areas shall be in accordance with the provisions of this code addressing parking lots including but not limited to, landscaping, fencing, lighting, pavement, etc.

(Ord. No. 96564 § 3)

35-527 Off-Street Truck Loading Requirements**(a) General requirements**

Truck loading facilities, shall be required in all zones other than the "D" Downtown District for structures containing uses devoted to businesses, industry, manufacturing, storage, warehousing, processing, offices, professional buildings, hotels, multiple family dwellings, hospitals, airports, railroad terminals, and any buildings of a commercial nature.

No structure shall be designed, erected, altered, used, or occupied unless the off-Street truck loading facilities herein required are provided. In the event that structures are enlarged, expanded, or changed, the structures shall not be used, occupied, or operated unless there is provided at least the amount of off-Street truck loading facilities that would be required if the increment were a separate structure.

(b) Responsibility

The provision for and maintenance of the off-Street truck loading facilities shall be the joint and several responsibility of the operator and owner of the land upon which the structure requiring the facilities is located.

(c) Types and location

There shall be two (2) sizes of off-Street truck loading spaces designated. "Large" and "Small." Each large space shall have an overhead clearance of at least fourteen (14) feet, shall be at least twelve (12) feet wide, and shall be at least fifty (50) feet long, exclusive of access or maneuvering area, platform, and other appurtenances. Each small space shall have an overhead clearance of at least ten (10) feet, shall be at least eight (8) feet wide, and shall be at least twenty (20) feet long, exclusive of access or maneuvering area, platform and other appurtenances.

(d) Location

Off-Street truck loading facilities shall be located on the same lot on which the structure for which they are provided is located; provided, however, that facilities provided under cooperative arrangement as hereinafter permitted may be located on another site not more than three hundred (300) feet from the structure for which they are provided. Service entrances and service yards shall be located only in the rear or side yard. Service yards shall be screened from adjacent residentially zoned or used property by the installation of a bufferyard as set forth the Landscaping Standards of this Chapter.

(e) Construction and maintenance

Off-street truck facilities shall be constructed, maintained and operated in accordance with the following specifications:

(1) Drainage and surfacing

Areas shall be properly graded for drainage, surfaced with concrete, asphaltic concrete, or asphalt, and maintained in good condition free of weeds, dust, trash, and debris.

(2) Protective screen fencing

Areas shall be provided with protective screen fencing such that occupants of adjacent structures are not unreasonably disturbed by the movement of vehicles either during the day or night.

(3) Lighting

Lighting facilities shall be so arranged that they neither unreasonably disturb occupants of adjacent residential properties nor interfere with traffic.

(4) Entrances and exits

Areas shall be provided with entrances and exits so located as to minimize traffic congestion.

(f) Combined facilities

Requirements for the provision of off-street truck loading facilities with respect to two (2) or more structures may be satisfied by the permanent allocation of the requisite number of spaces for each use in a common truck loading facility, cooperatively established and operated; provided, however, that the total number of spaces designated is not less than the sum of the individual requirements unless, in the opinion of the Director of Development Services, a lesser number of spaces will be adequate, taking into account the respective times of usage of the truck loading facilities by the individual users, the character of the merchandise, and related factors. In order to eliminate a multiplicity of individual facilities, to conserve space where space is at a premium, and to promote orderly development generally, the Director of Development Services is hereby authorized to plan and group off-street truck loading facilities cooperatively for a number of structures requiring such facilities within close proximity to one another in a given area in such manner as to obtain maximum efficiency and capacity, provided consent thereto is obtained from the participants in the cooperative plan.

(Ord. No. 98697 § 1)

(g) Minimum requirements; area

The following minimum truck loading spaces shall be provided in all districts for structures containing the uses enumerated in Table 527-3:

Table 527-3
Minimum Truck Loading Spaces

Square Feet of Gross Floor Area in Structure	Required Number of Spaces
0 up to and including 12,500	1 (small)
12,501 up to and including 25,000	2 (small)
25,001 up to and including 40,000	1 (large)
40,001 up to and including 100,000	2 (large)
For each additional 80,000 over 100,000	1 (large)

(h) Waiver

The Director of Development Services is authorized to waive the off-Street loading requirements for structures that are required to provide and maintain fewer than five (5) off-Street parking spaces, or any other structure if the design and the proposed use of the structure shows no need of off-street loading.

(Ord. No. 98697 § 1)